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# BETTER FRUIT

VOLUME IX

FEBRUARY, 1915

NUMBER 8

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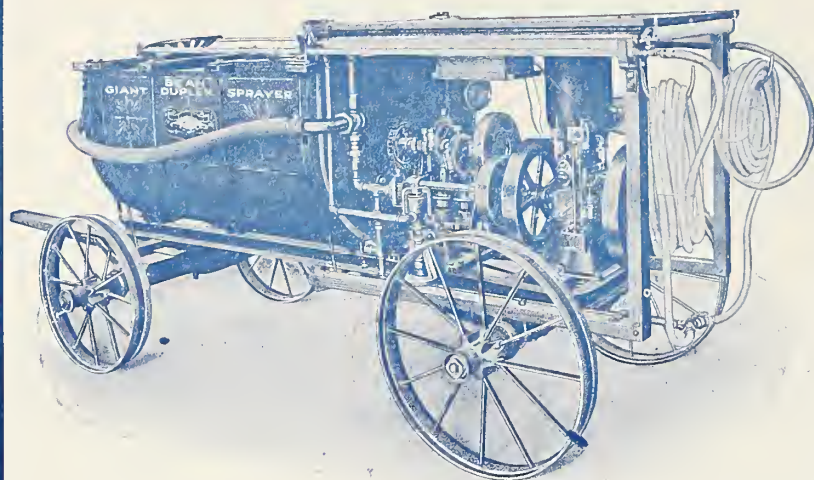
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# BETTER FRUIT

AN ILLUSTRATED MAGAZINE PUBLISHED MONTHLY IN THE INTEREST OF MODERN, PROGRESSIVE FRUIT GROWING AND MARKETING

## How Can We Make More Money On Apples?

By E. H. Shepard, Editor "Better Fruit."

**W**HENEVER any line of business is not paying a satisfactory profit there is a reason. The logical thing to do, which fruitgrowers have not done, is to make a thorough investigation of each department of the business in order to find out where the leakage is, how the cost of production can be reduced and how the profit can be increased. In other words, it is necessary to make a complete analysis of your business. Usually when a business fails to pay a profit there are reasons.

Fruitgrowers today are in a similar position to the manufacturers whose business was affected by the Underwood tariff. Our prices are lower, and therefore we have got to investigate our business, analyze it and find what we can do to reduce the cost of production, what we can do to create a greater efficiency in our selling methods and what we can do to secure better prices. This naturally divides itself under several heads:

### First—Cost of Production

I have talked with a great many growers upon this subject and in nearly every instance I find that few growers have kept a record of the actual expenses incurred in growing a crop of apples, and therefore I seldom find one who can furnish the costs in each department of growing. Without this we cannot ascertain what is costing us too much money, and therefore we do not have a definite knowledge as to where we can reduce the cost of production. The average grower will tell you that it costs all the way from 70 cents to \$1.00 per box to grow a box of apples, pack it and deliver it to the local warehouse or depot. The cost of growing a box of apples consists of the following items of expense: Pruning, cultivation, spraying and irrigation. When growers keep records of these items of expense and determine the exact costs, and compare them with the other growers' accounts, then they will ascertain where their own costs are too high, and with such knowledge they certainly ought to be able to reduce each cost to a reasonable minimum.

### Harvesting

The harvesting cost varies perhaps more than almost any other cost of the grower and has varied in the past from about 40 cents a box to 60 cents. Again, seldom do I find a grower who knows the exact cost of each individual feature connected with harvesting. Until such items of expense are known in connection with each feature of the

harvesting, the grower is certainly not in a position to reduce this cost. It may be surprising to some of you who have not given the matter study to know that there are ten individual costs, from picking the apple to delivering it to the warehouse or depot. They are as follows: Cost of the box; hauling same knocked down to packing house; making up the box, including nails; picking, hauling empties to orchard and filled boxes to packing house, grading, packing, paper, nailing up, extra cost in packing house, hauling to the depot.

## Features of this Issue

HOW CAN WE MAKE MORE MONEY  
ON APPLES

WHAT IS THE FARMER'S REAL  
INCOME

LEAF NOTCHES A GUIDE TO  
VARIETIES

SPRAYING AND PRUNING TO  
COMBAT POWDERY  
MILDEW

HOME USE SAVES BIG APPLE  
CROP

If we can save 5 or 10 cents per box in the growing and 10 cents per box in harvesting, it is worth saving. I know of a few orchards where the growing expense this year was 25 cents per box. This included all costs connected with the growing of the crop from the end of harvesting until the beginning of the next harvesting season. I believe I am safe in saying that it has been costing growers over 70 cents per box to produce and harvest a box of apples, and I believe I am safe in saying that this expense can be reduced to approximately 60 cents per box, not including interest on the investment.

### Second—By-Products

The cull apples from an orchard at the age of full bearing will be from 10 to 20 per cent of the entire crop. The grower understands that these cull apples are costing him just the same amount of money to grow, just the same amount of money to pick and just the same amount of money to grade out that the good apples are costing. If he cannot dispose of these cull apples then he has lost just so much money which

he has spent in producing them. Vinegar factories and cider mills paid last year \$7.00 and \$8.00 per ton, and this year they paid \$6.00 per ton. In dollars and cents the cull apples, at \$6.00 per ton, will amount to about \$20.00 per acre. If a man has 40 acres that would mean \$800, which is a nice little sum for the grower to realize out of what otherwise would be waste and therefore bring him nothing.

### Third—Diversity Farming

For nearly 40 years I have tried to find a way which would enable me to earn a living by working half of the time and loafing the other half, but I have not found it. Yet the great majority of fruitgrowers in the Northwest have evidently been trying this stunt for years. You know and I know that the average orchardist does not actually put in much more than six or seven months' work on his place during the entire season outside of his chores. By that I mean that after the first of November, when a crop is harvested, and during the months of December, January, February and March, the fruitgrower does not do much of anything except a little pruning. The other six months, outside of the harvesting season, the average fruitgrower is not a very hard worker, and a big lot of them spend from one-quarter to half their time fooling around town instead of being actually engaged in producing something on the ranch which would bring them in extra money. With few exceptions, there is not a single man engaged in the fruit-growing business in the Northwest who cannot do something to bring in some extra money. It is not my purpose to tell you just how to do these things, but I do want to call your attention to a few of the diversity lines in which you can engage and make some extra money from without very much expense and in this way utilize your time and put in 365 days of the year if necessary. Among such side lines, which any fruitgrower can engage in if he is not too lazy, are bees, poultry, hogs, sheep, truck gardening and dairying. The work is not hard nor the amount of time required very great to care for bees, poultry, hogs or sheep. Dairying and truck gardening require considerable extra work, but no more time than the average fruitgrower could reasonably spare and still give his orchard the best of care.

All of us know that our soils quickly become deficient in nitrogen and humus. In order to supply these elements and maintain the fertility of the soil





Display of the Prosser Commercial Club, winner of third prize of \$50 among feature displays entered by organizations at the Seventh National Apple Show, 1914. The value of diversified farming in connection with the fruit business is emphasized in this exhibit.

we are compelled to grow cover crops, as the ground requires. On these cover crops we can feed a drove of hogs, a flock of sheep or a herd of dairy cows. The suggestions are not experimental, because I actually know of a number of growers who are making good money on the diversity lines such as I have already mentioned. At the National Apple Show at Spokane I met one fruitgrower who told me that already this season he had sold \$13,000 worth of hogs and \$7,000 worth of cattle.

#### Fourth—Cost of Marketing

I have always believed, and there are many who concur, that our cost of marketing has been unnecessarily high. If you are going to do anything successfully you must do the job thoroughly, and therefore I have begun at the bottom and first told you that you must reduce the cost of production, which you can do; that you must reduce the cost of harvesting; that you can and must increase your income by diversity lines; and now I say to you that you must go after the cost of marketing in the same thorough manner and endeavor to have it done in the most economical way. It is not my intention to criticize any particular marketing concern, but the system in general. In each one of the different fruit districts at the present time we have all

the way from a half dozen to one dozen marketing concerns. This means that at the present time there exists an unnecessary number of overhead duplicating expenses which we fruitgrowers have to pay for. I believe that the interest is such and the necessity of the growers so great that, through their influence and with the willing consent of many marketing concerns, a number of them can be harmonized and brought together, thus eliminating the number and reducing the unnecessary expense in marketing for which the grower pays.

But a greater evil exists in connection with too great a number of marketing concerns than the extra expense of marketing. By that I mean that an unnecessary number of marketing concerns has resulted in an unnecessary cut on the price of apples this year. This self-competition is probably costing the grower more this year than any other one feature in connection with his business. The complaint of price cutting seems to be quite general on the part of marketing concerns,—each apparently blaming the others. I have heard of a number of instances where this price cutting has taken bread out of the fruitgrowers' mouth. One manager told me that after he had sold a number of cars to an Eastern firm his price was cut by a competitor 15 cents on one grade and 10 cents per box on another. Another instance came to my attention: A marketing concern quoted a dealer at a certain price, which the Lord knows was pretty low, but the dealer declined the offer, stating that he was quoted 25 cents less per box. Here are three instances of the self-competition where it cost the grower 10, 15 and 25 cents per box this year.

#### Fifth—Home Storage

I have been asked to discuss this subject upon several occasions. As I am simply calling attention to the main features where money can be saved and made, I will not go into this in detail, but will simply cover it in a general way. Nearly all Eastern cold storages do not accept apples on cold storage, no matter how short a time they may remain, at less than a two-months' charge, which is usually 10 or 12 cents per box. Season charges vary in different cold storage plants from 17 to 25 cents. Consequently the average cold storage and Eastern warehouse will probably charge somewhere from 15 to 20 cents per year. The reason for this is that Eastern cold storage plants are usually built in cities alongside railroad tracks, where real estate is very high, and consequently they must charge this sum in order to pay expenses and make a fair profit. Cold storage plants in our fruit districts can be erected alongside of railroad tracks on cheap ground, and the actual cost



Display of Greenacres Boys' Apple Club at the Seventh National Apple Show, 1914. This is said to be the first boys' apple club in the world.



of cold storage in the same for the average season would be somewhere from 5 to 10 cents per box, which would mean a saving to the fruitgrower of at least about 10 cents per box on storage cost alone.

In addition to this there are other items of expense connected with Eastern cold storage, such as reloading, switching and inspection. Frequently there is extra freight on back-hauls or where apples do not go through direct to destination points on in-transit rates. These items will be a further reduction in expense of several cents per box.

Our crop comes on pretty quickly and frequently, as this year, ripens very rapidly. Without a sufficient amount of cold storage at home, particularly when there is a shortage of cars, our fruit is held too long in common storage, and consequently becomes too ripe when it reaches destination and therefore, not being fit for cold storage, it has to be sold on the market, and if the market is glutted our profits have to be sacrificed. But do not misunderstand me. I do not mean that we ever will or can expect to build sufficient cold storage houses to cold storage all of our crop. Neither do we want to. We always have and always will have to use a good quantity of Eastern cold storage. This is necessary because we must maintain in future years a supply of apples in cold storage near big consuming points in order to be able to supply the trade quickly as demand will require.

In connection with home storage, I trust it will also be in place to make a few remarks about packing houses and community packing houses. I believe that every fruitgrower who has 40 acres is justified in having a packing house sufficient to care for his own crop. Such a packing house should be built so that it will be cool in the early part of the season and prevent the apples from ripening too fast; it also should be built so that if we are delayed in packing it will afford ample protection against the apples freezing if exceedingly cold weather comes on before our crop is packed completely. I believe that growers who have less than 40 acres can build community packing houses to advantage. In this way they can make arrangements for handling their crop on a much smaller investment and at a much less expense than if they were compelled to build individual packing houses.

#### Sixth—Greater Consumption

The fruitgrower is just beginning to realize that greater consumption is an important feature in securing better prices. Two samples of greater consumption near at home are striking illustrations. During the National Apple Day celebration a campaign was waged in the City of Portland and in about two weeks 80,000 boxes of apples were consumed. In the City of Seattle, which has a population of about 300,000, a campaign was put on during National Apple Day week and 60,000 boxes of apples were sold in one week. The City of Seattle has 300,000 popula-



Lighthouse made of apples. Entered by Cashmere Fruit Growers' Union at the Seventh National Apple Show, held November 16 to 21, 1914, in Spokane. This exhibit won second prize of \$100 among the feature displays entered by organizations.

tion. The population of the United States is 90,000,000, and therefore it is three hundred times greater than Seattle. If apples were properly distributed all over the United States, arrangements made to sell at a reasonable retail price, with the right kind of publicity and advertising, on the above basis the United States would consume 18,000,000 bushels of apples in one week. I do not believe the crop of apples this year in the United States will exceed (and I think it will be much less) 150,000,000 bushels, or 50,000,000 barrels. At the above rate it would be possible for the United States to con-

sume the entire crop of apples of the year 1914 in eight weeks, or less than two months.

On this basis of figuring, it seems evident to me that our systems of selling, distributing, publicity and retail prices are far from satisfactory and a long way from perfection.

#### Seventh—Exorbitant Retail Prices

Exorbitant prices prevent consumption. Moderate prices increase it. Every one of you fruitgrowers know, and it is a fact, that the retail prices on apples in the past years have been almost equivalent to extortion. The





Showing the crowd at the Oregon-Washington Railroad & Navigation Company demonstrations given by Mrs. Eleanor Meacham Redington, at the Seventh National Apple Show.

average retail profit in the grocery business is from 15 to 20 per cent; on tobacco 25 to 50 per cent; clothing about 50 per cent. In fact nearly all retail prices, outside of a few special lines, vary from 15 to 50 per cent. How about the retail prices on apples?

I had a letter only a few days ago from Boston from a friend who stated that he had to pay 40 cents per dozen, retail, for Jonathan apples. The Jonathan is not a large apple, and while I do not know the exact size in this case, suppose it was 138; that would mean that a box of apples retailed at \$4.40. You growers know what you got for your Jonathans; you know the freight is 50 cents per box; the commission house aims to make about 10 per cent, and therefore you can figure out the retail profit.

I have investigated a number of instances on the retail prices of apples and invariably I find that they run all the way from 100 to 500 per cent profit. In other words, where the average business man does a successful business at a retail profit of from 25 to 50 per cent, the retail profit on apples is averaging, in my opinion, from 100 to 500 per cent. If the retail price is high, it prevents consumption. If the retail price is reasonable, it increases consumption, and increased consumption increases the demand. This means firmer and better prices for the grower.

While we have many evils in the apple business that are preventing us from getting our just prices, I believe that exorbitant retail price is the biggest stumbling block in the apple business today and is doing more than all other features to prevent the fruit-grower from getting a just price for his box of apples.

#### Motor Power on the Farm

A few years ago practically everything was moved by horse power except steam engines. It is interesting indeed in reading the war news to note that where horses were used in moving siege guns they are now moved by motor-driven vehicles. In addition to this the motor vehicles are being used in the present war for transporting the troops and for moving the supplies. Gasoline motors seem to be super-

seeding the horse very rapidly. A few years ago a gasoline engine was scarcely ever seen on the farm. Today fruitgrowers are using gasoline engines to run the spray outfit, to pump water, saw the wood, cut the feed; they are using motor-driven vehicles to go to and from town on business as well as for pleasure; they are using auto tractors to haul their fruit to the railway depot; traction engines are used for cultivating the orchards. All of this is because of greater efficiency and economy. The small auto tractor has arrived, one that is suitable to the small farmer and orchardist. It has been definitely determined by actual practice that the auto tractor is a money saver for any man who has 100 acres to cultivate. There are many who believe it is a money-saving proposition where the acreage is considerably smaller. The gasoline engine can be used in running the husker, running the silo, the threshing machine; in fact everything which the farmer did by horse power can be done by motor power, except on very small farms or intensified farming like truck growing.

#### A Few Cows Pay Well

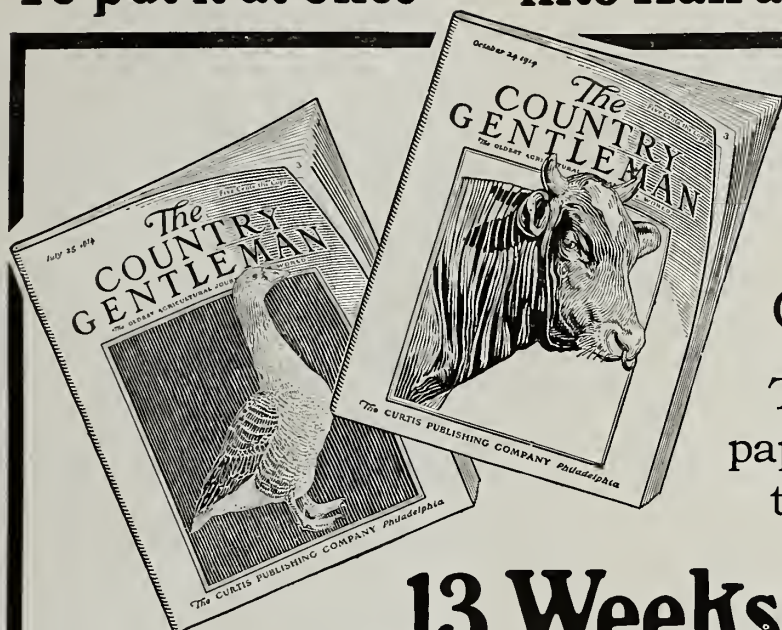
Fruitgrowers throughout the Northwest are finding they can take care of a few cows along with the orchard work and in this way secure an additional income without extra expense. Co-operative creamery routes are being established in some fruit-growing sections. Naturally the fruitgrower will want to know more about the dairy business. We suggest Kimball's Dairy Farmer, which contains splendid information about dairying. The price of Kimball's Dairy Farmer is \$1.00 per year. We can give you a clubbing offer of Kimball's Dairy Farmer and "Better Fruit" for \$1.60 per year.



Beautiful exhibit made by the Northwestern Fruit Exchange of the "Skookum Brand" at the Portland Land and Product Show and the Seventh National Apple Show.



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## What Is the Farmer's Real Income

[Office of Information, United States Department of Agriculture]

**E**XTENSIVE investigations into the profits of farming have indicated that the amount of money which the average farmer receives for his year's work is little more than that which he would be paid if he hired himself out as a farm hand to one of his neighbors. In other words, though the farmer is in business for himself, the average farmer gets little or no money reward for the intelligence and skill with which he has managed his affairs or the risk and responsibility he has assumed. But he must get something in return or no one would trouble to farm for himself. A recent study conducted by experts in the United States Department of Agriculture shows that in many cases this reward may best be found in the products with which his farm furnishes him directly. When a farm is nearly, if not quite, self-sustaining, say agricultural experts, when it supplies the family that lives upon it with most of the necessities of life, a large money income is not necessary to prosperity. A greater sum derived from a farm which yields nothing for home consumption may leave the occupants much worse off.

Under the title of Farmers' Bulletin 635, "What the Farm Contributes Directly to the Farmer's Living," the Department of Agriculture is about to publish the results of a survey of conditions on a large number of farms in the ten States of North Carolina, Georgia, Texas, Kansas, Iowa, Wisconsin, Ohio, Pennsylvania, New York and Vermont. The farms selected for study, though possibly a little more prosperous than the average, were fairly representative of their sections, which, it will be noted, included three corn and cotton areas, two states in the corn and wheat belt, two regions where general farming was carried on and three different dairy districts. The average value of the chief necessities of life—food, fuel, oil and shelter—used each year by the farm family the investigators found to be \$595.08. Of these necessities, estimated in money, the portion contributed directly by the farm was \$421.17, leaving \$173.91 to be purchased with the cash obtained from

the sale of products. In considering these figures it must be remembered that if the farmer had been compelled to pay city prices for his home-grown necessities, this \$421.17 would have represented much less comfort.

Of the food consumed 63 per cent was furnished by the farm. This proportion varied greatly in the different sections, but was greatest in the locality studied in North Carolina, where the farms supplied 82.3 per cent of the food consumed, while the average in the New York locality was only 50.4. In view of the present economic crisis in the South this fact is regarded as of particular significance, since it demonstrates the extent to which, with a proper system of agriculture, Southern farms can be made self-sustaining. Concentration upon one cash crop, cotton, has proved disastrous and agricultural authorities are now trying in every way to induce the people to adopt a system which will lead to conditions similar to those now prevailing in this particular area of North Carolina.

In this connection the investigation revealed some interesting facts in regard to the four items of groceries, animal products, fruits and vegetables in the average farm family's food bill. Of the value of the food consumed groceries constituted practically one-quarter, animal products more than one-half, vegetables 11.6 per cent and fruit only 6.3. Practically all of the groceries were bought; on the other hand, the quantity of fruits and vegetables used was in direct proportion to the quantity raised on the farm, and where this quantity was great the grocery bill was correspondingly low. This was also found to be true of animal products, including of course not only butcher's meat but poultry, eggs, milk, cheese, etc. Where these were abundant on the farm fewer groceries were purchased. Since the grocery bill was found to be ordinarily two-thirds of the entire amount expended in cash for food, one very obvious and effective way of economizing appears to be to raise more vegetables, more fruit, more milk and eggs. In many cases, experts

say, this can be done with no appreciable increase in trouble or expense.

Next to food, shelter is probably the most important necessity of life. In considering the farmer's income, however, a common error in the past has been to ignore the question of house rent. The value of the house has usually been included in the value of the land and the whole considered as capital invested on which interest must be paid before the farmer can be regarded as receiving any pay at all. This method, however, assumes that the farm family is to have shelter for nothing—an assumption which the city worker with whom it is not unusual to pay out from one-third to one-quarter of his entire wages for rent alone would regard as most astonishing.

According to the recent investigation, if the average farmer had to pay rent, his home would cost him \$125 a year. This figure represents ten per cent of the value of the average house. Including interest, depreciation and repairs, this is regarded as a fair rental charge for the class of houses usually found on the farm.

With the information at their command, the investigators were also in a position to compute the average cost of board and lodging on the farm. In this they included an item very easily forgotten—the value of the housework performed by members of the family. This was reckoned on the basis of the wages that would have had to be paid for hired assistance. Including this with the more obvious charges for food, fuel, light and rent, it was found that board and lodging for each individual averaged \$14.62 a month. But of this sum, it is interesting to note, the farmer paid out in cash only 22 per cent. Exclusive of lodging the board of the average hired man cost \$10 a month, but here again the farmer had only to pay \$3.00. The remaining \$7.00 was furnished by the farm as a result presumably of the hired man's own efforts.

The averages obtained as the result of this investigation are not, of course, to be taken as mathematically exact for the entire country. In the opinion of agricultural experts, however, they point with convincing emphasis to the possibilities of comfort and prosperity that may be realized by a fuller utilization of all the farm's resources. Cash crops are not the sole, and on the average they are not even the chief source of real income. It is really what the farm furnishes directly to the farmer that enables him to support his family. To increase the quantity and quality of this direct supply is one great object of farm management studies.

### Dairying

Fruitgrowers are taking up dairying quite extensively as a side line, and therefore it is our pleasure to call your attention to the fact that Hoard's Dairyman, published at Fort Atkinson, Wisconsin, is one of the best publications on this subject in America.

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**Buy It Now.**—At a meeting of the agricultural advertisers and publishers in Chicago, after discussing the business conditions of the country, there was a unanimous sentiment that the financial condition of the United States is better at the present time than it has been for several years. The crops throughout all of the farming districts were good in 1914, and fair prices for nearly every product grown on the farm have been realized with comparatively few exceptions. The new currency system is meeting with general approval of the banks. The regional banks will be strong factors in equalizing the financial conditions, supplying the needed capital in every section for the moving of crops and other necessary purposes. The United States is prosperous. Already business in the East and Middle West has shown a decided improvement. There is no reason why this improvement should not extend to the Pacific Coast. It is believed that conditions warrant a rapid revival of business, and if this comes prosperity will follow. On account of the war prices on many commodities are advancing. In view of this it seems good judgment to suggest that now is a good time to purchase. If the people of the United States will begin purchasing the things they have to have during the coming year it will not only frequently save considerable money on the purchase, but start the wheels of commerce going, and if the wheels of commerce once start it means prosperity for the country and success for everybody. Consequently we are publishing in this issue a number of suggestions in separate paragraphs, each one headed "Buy it now."

Agricultural publications are back of this movement and of buying now what they will need and have to buy later. If the people of the country grasp this movement it will mean that general business activity will be increased, everyone will feel the beneficial effects—jobbing houses will soon be working full force, factories running full time with full help, and in this way men who are now out of work will be given employment and many families who are in need of actual necessities for lack of employment will be given work and families provided for. It is not intended that this campaign should suggest indiscriminate buying, but it suggests the economic buying and urges people to buy now what must be bought a little later. It is hoped and believed this campaign will meet with the approval of the farmers. Government statistics show the farmers to be more prosperous today than they have been. In 1914 the output from the farms exceeded that of 1913 by \$83,000,000, and while the farmers are showing a margin of profit the merchant and manufacturer are having a hard time making ends meet. Many in the cities are out of a job. If the people will buy now many things they need a little later factories would soon be running full blast and many idle people be given employment. With the general buying of the necessary merchandise, supplies and equipment, business conditions will materially improve and the unsettled conditions will be lessened and confidence restored with rapidity.

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tion to the profit that can be made by engaging in any line of business, farming or in a professional way, investors will profit by the rapid advances in property that must necessarily follow from the increased population that will be the result of the opening of the Panama Canal, and the increased population that will result from the thousands and hundreds of thousands of visitors who, after visiting the Pacific Coast, will make their homes with us. Nowhere in the world is there any section of the country where the climate is so perfect as on the Pacific Coast; nowhere in the world is the scenery more attractive or the people more progressive or the future brighter. Railroads are making especially low and round-trip rates to these expositions. "Better Fruit" advises everyone who visits these expositions to buy their railroad ticket one way through the Northwest, because the scenery along the railroads leading into the Northwest is most magnificent along any of the transcontinental lines. Among a few of the most important wonderful bits of scenery throughout the Northwest on the Pacific Coast may be mentioned the Rocky Mountains, the Yellowstone Park, the Great Salt Lake, Puget Sound, the great Columbia River, the most magnificent river in the world and next to the largest, with its wonderful bits of scenery such as Rooster Rock, Castle Rock, Multnomah Falls, Bridal Veil Falls, Latourelle Falls. The fruit valleys of Southern Idaho, Yakima Valley,

Wenatchee Valley, Rogue River Valley, Willamette Valley and Hood River are celebrated for their apples and fruits all over the world. Grander than anything we have mentioned in the Northwest are the wonderful snow-capped mountains, covered with snow the year round, and all ranging from 11,000 to

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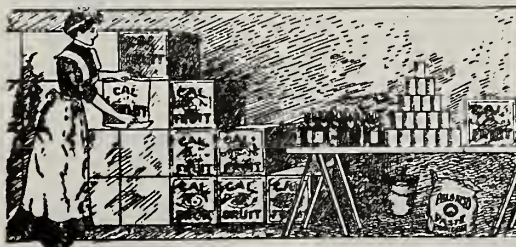
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### Leaf Notches a Guide to Variety.—

A most common-sense suggestion appears in an article under this caption in this issue by Mr. L. M. Cox of Zillah, Washington. Many fruitgrowers have planted apples and other kinds of fruit which have not turned out true to name, for which they have blamed the nurseryman. It is very strange indeed that it did not occur to the fruitgrowers that they might determine what varieties were not true to name when the trees were young instead of waiting until the trees were ten and twelve years of age and come into bearing. A few simple suggestions along this line seem worth while. Whenever a fruit-grower sets out a young orchard the first thing he should do, as a matter of insurance, is to study the character of the bearing trees of these varieties, and by comparison find out if the young trees he had set were true to name. Different varieties of trees have different shaped leaves, different colored wood and they grow differently. By studying these and other natural characteristics of trees and making comparisons, it would be a simple matter for the fruitgrower to ascertain the first year if his trees were all true to name.

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How Can We Make More Money in Apples?—In this edition there is an article by the editor of "Better Fruit," "How Can We Make More Money in Apples." The editor believes it contains some valuable suggestions that are well worthy of every fruitgrower's attention. Some of the ideas explained in this article are treated with more fully in the December and January issues of "Better Fruit," therefore the editor suggests and calls attention to the editorials on "By-Products," "Reducing the Cost of Apples from the Packing House to the Retailer," "The Cost of Harvesting," "National Apple Day and a Greater Consumption," appearing in the December edition of "Better Fruit." In addition to these two articles on by-products, there appeared in the January edition one by Mr. Robert S. Phillips, under the heading of the "Seventh National Apple Show and Fruit Products Congress," and another entitled "Growers Grip By-Products Problem." Every fruit-grower who has not read the articles referred to in this editorial, we believe, will find it worth his while to do so.

**Advertising the Apple.**—Advertising the apple is beginning to receive the publicity it is entitled to, as many publications are taking up the subject of greater consumption. Some of the largest advertising agencies are now at work on this problem with a view to drawing up plans for advertising campaigns for the benefit of the fruitgrowers. Attention is called to the editorial that appeared in the Agricultural Advertiser which appears elsewhere in this issue, which gives some excellent suggestions from the standpoint of the advertising men as to what can be done to increase the consumption of apples.

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Tree Tanglefoot is better than anything on the market—it will absolutely water-proof the crotch of a tree or a cavity or wound in a tree, when nothing else will do it.

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Partially girdled trees, if given prompt attention, and the girdled surface coated with Tree Tanglefoot, will suffer no serious set-back, and new bark will gradually form, eventually covering the girdled surface. [Adv.]

The Shenandoah Nursery of Shenandoah, Iowa, is mailing out its wholesale list of nursery stock.

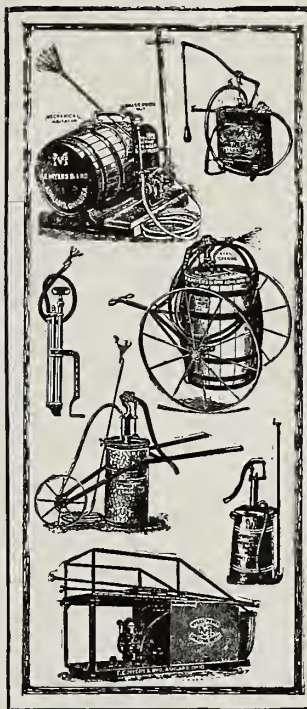
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**THIS** is appreciated most on long winter evenings. Then it is that the fruit cellar piled high with choice apples is visited nightly and a plentiful supply brought up for the entire family to enjoy.

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## Leaf Notches A Guide to Variety of Apples

By L. M. Cox, Zillah, Washington.

HAVING grown a setting of Winesaps till they began to bear—Ben Davis—I foolishly joined the crowd in laying all the blame on the nurseryman and advocating a law that would make it a penal offense to sell trees untrue to name. But it occurred to me that the nurseryman had the tree in his possession only one or two years, while the orchardist had it under closest supervision for four or five years before it came into bearing. I decided that if the grower would blame his own ignorance and then learn to know his own varieties, it would be a greater protection than any law, however drastic.

When I was a boy, there was an insect that so closely resembled a bumblebee that the only way I could tell the difference was to catch it.

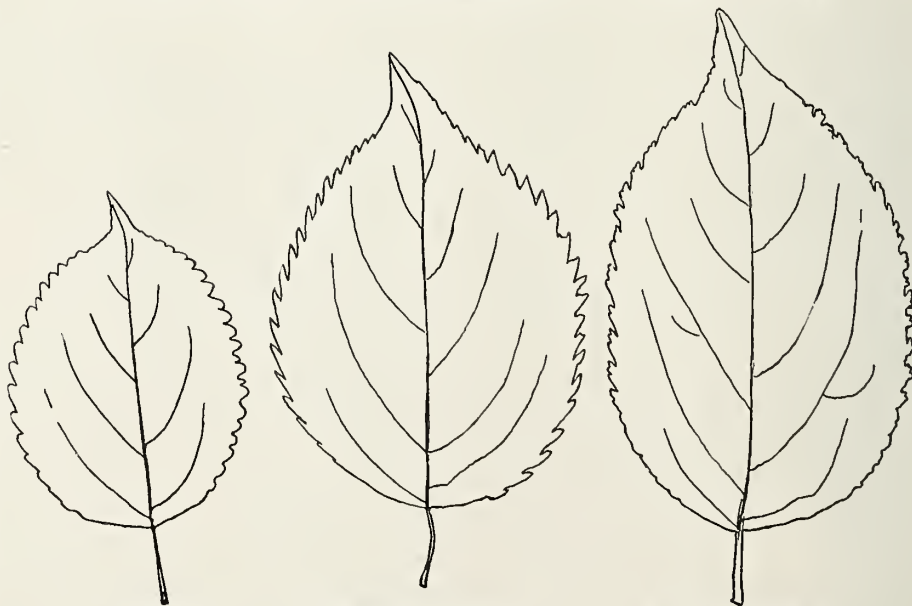
I determined to find some distinguishing characteristic of varieties that would obviate the necessity of getting "stung." I soon discovered that the notches on the edges of the leaves of certain varieties were very different. I continued the investigation until I was convinced that it was the best guide to variety I had learned. In the meantime I had set seven acres to Winesaps with a question mark by each tree. I waited anxiously until the leaves were mature enough to be typical; I then took leaves from bearing Winc-

saps and went over the seven acres tree by tree, comparing the leaves known to be Winesap with the ones I hoped were. Result: In that block of five hundred sixty-seven trees I found sixty-three Ben Davis, thirty Stayman Winesap and four unknown. I might

extend this article indefinitely by giving descriptions and drawings of leaves from different varieties, but think the ones given below will be adequate to my purpose.

I want to emphasize that each orchardist can learn and must learn to know all the varieties he is growing or expects to grow. Those who may use this test are reminded that I have called

ILLUSTRATIONS FOR LEAF NOTCHES A GUIDE TO VARIETY OF APPLES



No. 1—Winesap

No. 2—Stayman Winesap

No. 3—Winter Banana



it only a guide, and not an infallible one. It will not enable you to distinguish between a Ben Davis, Black Ben and a Gano. Neither will the notches alone enable one to tell a Stayman Winesap from a Mammoth Black Twig or an Arkansas Black, but the white underside of the Stayman leaf distinguishes it from the others, and the leaf of the Arkansas Black is thinner than either of the three.

In applying this test, use large, vigorous leaves from the bearing trees, as they furnish a better comparison with the large leaves of the young trees. Don't ignore other excellent tests, rather let this supplement them. The grower who does this should be able to determine the first season whether his trees are true to name. If there are any strays, they can be budded at small cost and one doesn't lose three or four years' growth of the tree.

I suggest that nurserymen co-operate with orchard men in the use of this guide. In their catalogs, along with description of the tree and fruit, let them picture a leaf typical of the variety, together with any other guide that will enable the orchardist to know, before bearing age, that his trees are true to name. If he will apply this test to his trees in the nursery row, he can eliminate all the strays and be doubly sure he is selling the grower what he calls for. I believe that with a leaf typical of the variety in hand, anyone at all familiar with varieties could inspect fifty thousand trees per day unless they were a hodge-podge of everything in the catalog. If the nurseryman will so co-operate, it will be a great help; but ultimately it is up to each orchardist whether he goes on catching bumblebees.

**One Man With A**  
**Kirstin**  
**Stump Puller**

**Can Clear Your Land**

Six speeds for all purposes, six powers for all stumps. Chain and cable models from \$37.00 up, complete. Get my catalogue and limited time prices now.

Write to A. J. KIRSTIN CO.  
3 Commercial St., Salem, Ore.  
(Eastern Offices, Escanaba, Mich.)

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APPLY NOW.

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## The Famous Quality Line

The result of 28 years' practical experience in building sprayers. Hurst Sprayers have stood the test of time and stand today head and shoulders above all competition. The big success of the Hurst line can be summed up in one word "Simplicity." Every Hurst Sprayer is a marvel of simplicity. No unnecessary parts to cause trouble and annoyance. Combined with simplicity they have the greatest convenience and utility.

## 32 Different Styles

A quality sprayer for every known need. Man, horse and gasoline engine power. Various sizes and styles of power sprayers, with and without engines. The Acme, shown below, is an exceedingly popular machine with the Western grower

## Get Our Big FREE Book

This book should be in the hands of every fruit grower and farmer. Used as a class book in many of the Agricultural Schools. Contains 74 illustrations and descriptions of insect and fungus pests and gives the remedy for each. Shows our complete line of sprayers.

Write the Royer Implement Company, of Portland, Oregon, or us for a copy of this free book at once.

Live dealers wanted everywhere.



**The H. L. Hurst Mfg. Co.** 8230 North St.  
Canton, Ohio



**For Scale, Insects and all Fungus Diseases**  
**that can be controlled in the dormant season use**

**Diamond Dry Spray-Sulphur 99.8% Soluble**

Active ingredients more than  
**60% Soluble Sulphur.**

**Spra-Sulphur** is a dry granular compound that quickly dissolves in hot or cold water.

Stays in solution; no sediment to clog or cut nozzle.

Costs less; does better work; saves freight.



Contains **NO** free alkali. No caustic soda.

**Spra-Sulphur** is manufactured under the original Hite patents filed in 1910 and recently revised, giving exclusive right to the use of all fixed alkalis such as sodium carbonate and similar compounds, with sulphur in the manufacture of spray materials.

PRICES { 1 lb. 20c    10 lbs. \$1.25    50 lbs. \$4.00  
              5 lbs. 75c    25 lbs. \$2.50    100 lbs. \$7.50

Your Copy of the Annual Catalog and Spray Book is now ready.

Ask for Catalog No. 204.

"How to Spray, When to Spray, What Sprayer to Use," is a splendid book that tells all about Goulds' Spray Pumps.

Gould's Spray Pumps will give and maintain the necessary pressure to spray right and are built for lasting service.

**Portland Seed Company**  
**Portland, Oregon**







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The Western Electric Rural Telephone—built by the manufacturers of all the 8,500,000 Bell telephones—is the standard for country service. It is in constant use by thousands of successful farmers who testify to its quality. Look it over, part by part, and you will quickly see why a

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gives perfect satisfaction at every hour—day or night—under all conditions. It always carries the voice full-toned and distinct.

Before any new telephone equipment is placed in your home, it will pay you to write for new illustrated booklet on rural telephones. Ask for Book No. 145.

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EQUIPMENT FOR EVERY ELECTRICAL NEED

## Producers and Distributors Reach Agreement

[From the Post-Intelligencer, Seattle, Washington]

**F**RUIT GROWERS of Washington, Idaho, Oregon and Montana and sales agencies representing a total tonnage of 15,000 cars of apples enthusiastically endorsed the program outlined by the by-products committee for the organization of the apple industry and in the afternoon indulged in a heart-to-heart talk which augurs well for the future of the apple industry of the Northwest. The enthusiasm of the 200 or more delegates knew no bounds when it was announced that the leading fruit distributing agencies of the Northwest had signed an agreement to

recognize and abide by the rulings of the governing board to be established.

This central governing body will consist of three members. It will supervise the entire apple industry of the Northwest, assist in the expansion of the market, maintenance of prices and prevent any demoralization of the market by underselling or injudicious consignments.

The agreement which created so much enthusiasm was read by ex-Senator W. H. Paulhamus, chairman of the by-products committee, who explained it in detail. All of the distributing agen-

cies signed it unconditionally with the exception of the Northwestern Fruit Exchange, which reserved the right to refer the question to the growers' local units whose fruit it handles. The agreement follows:

"Wishing to express their complete accord with any movement designed to promote the marketing of the North Pacific fruits, the undersigned selling agencies or distributors do hereby agree: That in case the growers of the four Northwestern states representing in districts and through the affiliated agencies 75 per cent of the total tonnage, form a central governing board for the purpose of regulating the marketing of their products in order to get the best distribution and to prevent the demoralization of prices, that we will, should we be so requested, join with the said governing board in studying the crop and marketing conditions with a view to helping the growers to estimate the marketing value of their products, and will furnish to said governing board at the close of each day's business, and sooner in special cases, copies of all quotations, sales reports, sales records, sales returns, inspector's reports, and all letters, telegrams and conversations that have a direct bearing on the selling of the fruit. We further agree that, if requested by the growers so to do, we will remit to such central governing board not to exceed one-half cent per box on all apples and pears, and one-quarter cent per box on all of the small fruits that we may market, when the returns are received and made, this amount being deducted as a charge in making settlement for the fruit. This agreement is signed with the express understanding that it is merely a declaration of policy, and that changes and additions will have to be made as found necessary in evolving a full working agreement so as to insure success among the parties at interest. Yakima County Horticultural Association, by W. M. Nelson; Richey & Gilbert Company, by H. M. Gilbert, president; Wenatchee Produce Company, by Conrad Rose; Wenatchee Fruit Growers' Association, by W. T. Clark; J. MacPhee Ferguson; J. E. Shannon; Spokane Valley Growers' Union, by Edward Pierce; North Pacific Fruit Distributors, by H. F. Davidson, president, J. H. Robbins, general manager; Northwestern



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Marvelous improvements. Extraordinary values in our 1915 price offers. You cannot afford to buy without getting our latest propositions. WRITE TODAY.

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# How to Use the Kimball Cultivator to Keep Your Orchard in Perfect Condition

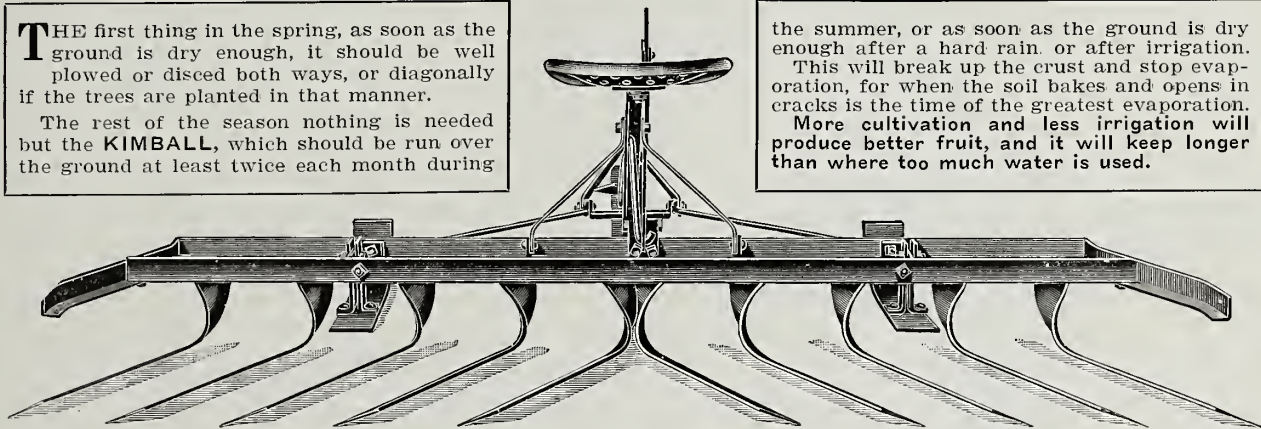
**T**HE first thing in the spring, as soon as the ground is dry enough, it should be well plowed or disced both ways, or diagonally if the trees are planted in that manner.

The rest of the season nothing is needed but the **KIMBALL**, which should be run over the ground at least twice each month during

the summer, or as soon as the ground is dry enough after a hard rain, or after irrigation.

This will break up the crust and stop evaporation, for when the soil bakes and opens in cracks is the time of the greatest evaporation.

More cultivation and less irrigation will produce better fruit, and it will keep longer than where too much water is used.



It is now for fruit growers to be thinking of how they can keep their orchards in good shape at the least possible expense.

For this work there is nothing that will equal the Kimball Cultivator.

While we know the fruit market is bad, we also know it will not always be in this condition, and the grower who neglects to cultivate his orchard at this time will lose the years of labor he has already put in on it, for an orchard that is not cultivated is soon a total loss.

Therefore get a Kimball and continue the good work.

MANUFACTURED BY

## W. A. JOHNSTON, The Dalles, Oregon

Fruit Exchange, by Reginald H. Parsons, president, W. F. Gwin, general manager; Wright Fruit Company, by J. Howard Wright; Pomona Ranch, by J. L. Dumas; Arcadia Valley Fruit Growers' Association, by A. R. Craig, manager."

The conference decided to perpetuate the present committee under the name of the Northwest Horticultural Committee, until such time as the governing board shall have been organized, and levied an assessment of 10 cents per carload on each of the districts to defray the expenses of the committee. The delegates turned down a resolution asking that they endorse the present horticultural bill now before the State Legislature, holding that inasmuch as they were a body made up of men from several states their endorsement would be injudicious.

## Orchard Yarn

Progressive orchardists, those right down to the minute in methods of protecting heavy laden fruit trees, are agreed that tying branches with Orchard Yarn is the modern way of supporting orchard trees. It is not expensive, is easily done, and the time to tie is when trimming. The spurs are then tougher, less easily broken off than later, leaves are not in the way and all parts of the tree can be seen. Saving but a small percentage of trees from being broken down will pay for the expense of tying an entire orchard. One-ply Tarred Manila Yarn will run about 200 feet per pound. Two-ply will run from 90 to 100 feet per pound. Put up in 5-pound balls or on 10-pound spools. In 5-pound balls the yarn pulls from the inside and is more easily handled.

Sold by all merchants handling orchard supplies.

Manufactured by

**The Portland Cordage Company**  
PORTLAND, OREGON

A resolution presented by T. H. Atkinson, of Entiat, saying that "it is the sense of this gathering to request the selling agencies to get together and work out a solution of their problems until such time as the growers' organizations have been formed," was passed unanimously. This was for the purpose of permitting the selling agencies to so arrange their affairs that they could give full reports and data to the central board when it is organized.

As a result of the two-day conference held in the assembly hall of the Chamber of Commerce, and which adjourned with a banquet in the Hotel Butler, the apple industry of the Northwest seems in a fair way to become efficiently organized. A decided sentiment has been created by prevailing trade conditions in favor of a united action on the part of the fruit growers, and none of the apple districts of any of the four states has ventured to stay without the pale of the new idea. One of the speakers expressed the feeling of the growers when he said: "Unanimity between growers, which seemed impossible, has been made possible because we realize how foolish we have been in trying to compete with one another." Each grower present at the conference pledged himself to go home and call a meeting of all of the growers of his district for the purpose of perfecting an organization. Three delegates at large and one delegate for each 250 cars shipped annually will be permitted each district. These delegates will

make up the general council of the growers, which will, in turn, choose three men to act as the governing board.

The districts entitled to three delegates each and others in proportion to their output are as follows: Hood River, Walla Walla, Milton, Dayton and adjacent points; Southern Idaho; Spokane, Moscow, Garfield and adjacent points; Wenatchee, Cashmere and up-river points; entire Yakima Valley from Kennewick up; Western Oregon, and the State of Montana.

Chairman Paulhamus explained that the session was exclusively for bona fide growers and that no marketing heads would be admitted. Howard Wright, of North Yakima, outlined a plan for the formation of a growers' organization independent of the selling agencies. He proposed that a council or advisory board shall receive daily reports from

### Position as Superintendent

Of large orchard, by thoroughly competent nursery and orchard man; or would consider well equipped orchard on part share basis; 25 years' experience and best references. Address "R," care "Better Fruit."

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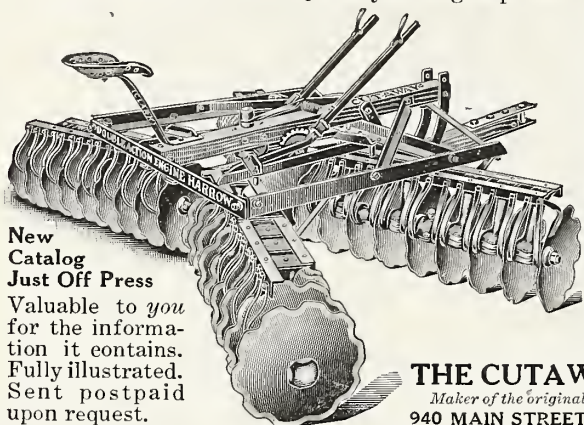
Experienced orchard man with executive ability, for Virginia. State terms, references. Turkey Knob Orchard, 753 Broadway, New York City.



## Have You a Tractor?

If you have a tractor, or if you are going to buy one, remember that the success and economy with which it is operated depends very largely upon the machines to which it is hitched.

**The Cutaway D. A. Engine Harrow**  
Has-made-good was the first harrow built especially for engine power.



New Catalog Just Off Press  
Valuable to you for the information it contains. Fully illustrated. Sent postpaid upon request.

It is heavy and strong throughout. The rigid main frame is made of heavy angles and is stoutly braced with angles. The disks are extra heavy cutlery steel, rolled to our own analysis and forged sharp. The bearings are dust-proof oil-soaked hardwood, perfectly lubricated. The hitch is adjustable to any tractor. The rigid main frame and axle draft rods distribute the pull uniformly over the entire machine.

Ask your dealer about the CUTAWAY (CLARK) Double Action Engine Harrow. If he doesn't sell CUTAWAY (CLARK) tools, write us at once. We ship direct where we have no agents.

**THE CUTAWAY HARROW CO.**  
Maker of the original CLARK disk harrows and plows  
940 MAIN STREET HIGGANUM, CONN.

## DEPENDABLE BRAND Lime Sulphur Solution

*The Standard Solution for  
The Fruit Growers of the Northwest*

Highest percentage of Sulphur in Solution in proportion to Baume test of any brand offered on this market.

MANUFACTURED BY  
**GIDEON STOLZ CO., Salem, Oregon**

**FREE Book on RHUBARB Culture**  
WRITE FOR IT TODAY —

Now is the Best Time to PLANT  
**RHUBARB, BERRIES and Small Fruit**  
If planted now you should derive good results

**J. B. WAGNER - Pasadena, Cal.**  
*The Rhubarb - Berry & Cactus Specialist.*

the selling agencies, giving amount and price of sales. Whenever any agency sells unreasonably low, it would be advised.

The committee report adopted by the growers yesterday creates six districts, from which delegates will be chosen to make up the growers' council. These districts are as follows: Hood River and adjacent shipping points; Walla Walla, Milton, Dayton and adjacent points; Southern Idaho; Spokane, Moscow, Garfield and adjacent points; Wenatchee, Cashmere and all up-river points; entire Yakima Valley from Kennewick up; Western Oregon, and the State of Montana. "In creating these arbitrary districts this convention realizes that it is merely providing a framework," recited the committee report, "but it would recommend in the selection of the first growers' council under

the provisions of this call that the members of the council from each district be as nearly as possible from the principal shipping points in that district in proportion to the tonnage of each, in order that every part of each district may be represented in the growers' council."

The election of delegates in each case shall be made from properly called conventions, and no salaried employees of existing marketing agencies shall be entitled to membership in the growers' council. The by-products committee, of which W. H. Paulhamus of Pierce County is chairman, is asked to supervise and assist in the calling of the first Northwest Growers' Council.

The members of the by-products committee are: W. H. Paulhamus, chairman, Puyallup; Truman Butler, Hood River; Gordon C. Corbaley, Spokane; M. J.

Higley, Payette, Idaho; J. L. Hughes, North Yakima; Conrad Rose, Wenatchee; H. M. Sloan, Florence, Montana; D. A. Snyder, Dayton, Oregon; Paul H. Weyrauch, Walla Walla, and J. O. Holt, Eugene, Oregon. Mr. Holt was the only member of the committee who was not present.

The delegates present were: W. A. Doyle, Kettle Falls; E. N. Robinson, Deer Park; F. E. Williams, Opportunity; C. B. Sawyer, Spokane; C. H. Furman, Zillah; Fred Farmer, North Yakima; F. F. W. Jackson, North Yakima; Dr. F. F. Gray, North Yakima; Austin Woodyard, Sunnyside; Harry Jones, Wapato; Arthur Karr, North Yakima; L. D. Humphrey, North Yakima; J. E. Shannon, North Yakima; J. Howard Wright, North Yakima; T. F. Roddy, Wenatchee; T. H. Atkinson, Entiat; J. D. Parkhill, Wenatchee; Clifford Chase, Okanogan; George Hauber, Leavenworth; E. C. Long, Cashmere; H. P. Johnson, Wenatchee; E. Allender, Okanogan; Frank Reeves, Wenatchee; R. P. Ballard, Husum; John Langdon, Walla Walla; E. C. Burlingame, Walla Walla; J. L. Dumas, Dayton; J. D. Taggard, Dayton; J. F. Slover, Milton; A. C. Denny, Milton; H. C. Taylor, Cashmere; F. H. Freeze, Cashmere; R. H.

## Clover Seed

We handle more clover seed than any dealer on the Coast and can fill any sized order promptly. Prices are always the lowest on the best grades of seed.

## Vetch Seed

This is a specialty with us and we are in a position to make the lowest market prices. Also, a complete stock of Seed Grain, Farm and Field Seeds, Garden Seeds, etc. Send us a list of what you are going to need for our prices.

Catalogue free.

**D. A. White & Sons**  
SALEM, OREGON

## Steam Pressure Canning Outfits

Can your Fruits, Vegetables, Corn, Meats, Fish, etc., for home use and for sale at a big profit. Outfit more than pays for itself the first year. Eleven different sizes. Book of Canning Recipes free with outfit. Tells how to can everything. Write for Catalogue B.

Built by  
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47 First Street  
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## ELASTIC PRUNING PAINT

SAVES TREES—ALL KINDS  
**FRUIT GROWERS' SUPPLIES**  
Send for Free Catalog  
Western Distributing Agents for the  
Cutaway (Clark) Orchard and Farm Harrows  
**E. G. MENDENHALL**

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Kinmundy, Illinois



Lang, Monitor; J. B. Ferguson, Wine-sap; I. L. Hooper, Nachez; C. S. La Farge, Wenatchee; E. W. Ross, North Yakima; N. G. Craig, Deer Lodge; G. W. Eastman, North Yakima; F. H. Madden, Medford; F. C. Kaylor, Bellingham; George E. Starr, Paterson; C. H. Chapman, Wenatchee; H. W. McDonald, North Yakima; L. W. Rhoderick, Wenatchee; B. M. Chapman, Cashmere; R. L. Bartlett, Wenatchee; L. P. Beecher, Peshastin; Miss Dorothy Jackson, North Yakima; A. E. Braggins, Cashmere; N. D. Mackay, White Bluff; W. E. Stone, Wenatchee; C. H. Curtis, Parker Heights; E. W. Berge, Hood River; Z. M. Headlee, Kennewick; W. W. Sawyer, Sunnyside; J. A. Pilard, Wapato; Mrs. Nettie E. Thorne, Hood River; L. Brewster, Cashmere; J. A. Marman, Peshastin; A. G. Melby, Wenatchee; W. J. Potts, Okanogan; C. G. Austin, North Yakima; E. H. Shepard, Hood River; O. B. Nye, Hood River; A. F. Bickford, Hood River; Oscar Vanderbilt, Hood River; E. E. Stanton, Hood River; A. D. Moe, Hood River; A. I. Mason, Hood River; D. H. Thorne, Hood River.

The heads of the selling agencies who will discuss the proposed apple union with the by-products committee are W. F. Gwin and R. H. Parsons, of the Northwestern Fruit Exchange; J. H. Robbins and H. F. Davidson, of the North Pacific Fruit Distributors; Conrad Rose, of the Wenatchee Produce Company; W. T. Clark, of the Wenatchee Valley Fruit Growers' Association; H. M. Gilbert, of Ritchie & Gilbert, Toppenish; H. M. Nelson and E. E. Sampson, of the Horticultural Union, North Yakima. These firms handle 85% of the Northwest apple tonnage.

### Buy It Now

Buy it now. Get what you will need in the spring now and help pass prosperity along.

Buy it now. Don't buy what you don't need, but buy what you do need now. It will put thousands of idle men at work who are suffering this winter.

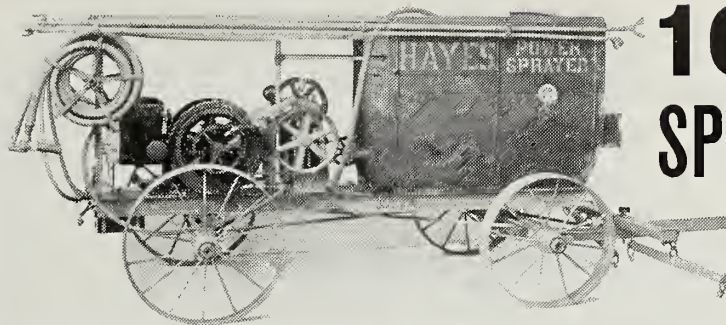
Buy it now. The suffering of thousands of families this winter will be stopped if we farmers will buy now instead of waiting till spring.

Buy it now. We farmers can bring back prosperity at once by buying our spring needs now instead of waiting.

Buy it now. If the farmers will buy their spring needs now it will start up factories during the winter when work is most needed.

Buy it now. There is 40,000,000 farm population in the United States. Their 1914 crop is worth \$9,872,936,000. If only ten dollars were spent for each person on the farm now instead of waiting till spring, it would put \$400,000,000 into circulation and give employment to thousands whose families are suffering where factories are idle.

C. E. Whittens Nursery of Bridgman, Michigan, is mailing out its 1915 catalog, "Strawberry Plants That Grow," which is very interesting.



# 100 % SPRAYING

**300 POUNDS  
PRESSURE  
GUARANTEED**

**H**IGH PRESSURE spraying is 100% efficient. The more thorough the spraying operation the greater is the **PROFIT** from the crop.

All **Hayes Power Sprayers** are *guaranteed* to maintain 300 lbs. pressure.

**25 STYLES—  
Hand or Power  
Sprayers for  
Small or Large  
Orchards**



Large  
Hand Sprayer

## Hand & Power Hayes SPRAYERS

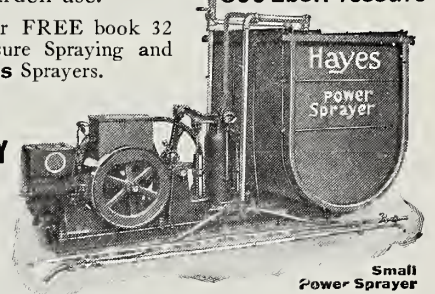
We make sprayers for orchards, field crops, shade trees, hops, poultry, painting, home and garden use.

**WRITE** Send postal for **FREE** book 32 on High Pressure Spraying and complete catalog of **Hayes Sprayers**.

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PLANTER COMPANY**  
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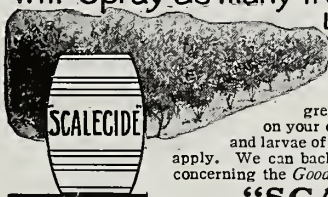
300 lbs. pressure completely atomizes the solution into a penetrating fog-like mist that *seeks out* and *adheres* to every particle of foliage. Less solution is required, less time to apply, hence lessened cost, besides, a better quality and larger quantity of salable fruit.

**1 1/2 h.p.  
100 Gallon Tank  
300 Lbs. Pressure**



Small  
Power Sprayer

**One Barrel of "Scalecide"**  
**Will Spray as many Trees as Three Barrels of  
Lime Sulfur**



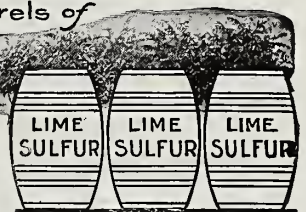
Send for our illustrated booklet—"Proof of The Pudding". Tells how "Scalecide" will positively destroy San Jose and Cottony Maple Scale, Pear Psylla, Leaf Roller, etc., without injury to the trees. Write today for this **FREE** book and also our booklet—"Spraying Simplified".

"Scalecide" has greater invigorating effect on your orchard—kills more scale, eggs and larvae of insects with half the labor to apply. We can back up this statement with facts concerning the **Good Results from Using**

**"SCALECIDE"**

Our Service Department can furnish everything you need for the orchard at prices which save you money. Tell us your needs.

We are World Distributors for **VREELAND'S "ELECTRO" SPRAY CHEMICALS** and **Arsenate of Lead Powder** (33 per cent), which, used wet or dry, has no equal in strength or texture. Avoid imitations. **B. G. PRATT CO., Mfg Chemists Dept. 50 Church Street, New York City**



**PORTLAND SEED COMPANY**  
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**NORTHWESTERN AGENTS  
Pratt's "Scalecide"**  
**ORDERS AND INQUIRIES WILL  
HAVE PROMPT ATTENTION**

## LOOK! Mr. Fruit-Grower



One of your choice trees is **Dying!** Why? **Gophers?** Yes, it's one of those Pocket Gophers taking **\$\$\$** out of **your** pocket. Protect your trees and save those **\$\$\$** by using

## THE CINCH POCKET GOPHER TRAP

If set by the directions and with judgment it will get the gopher and you will get the returns from that tree and others. If your dealer doesn't have the traps, write us at once. Sample trap postpaid 85c.

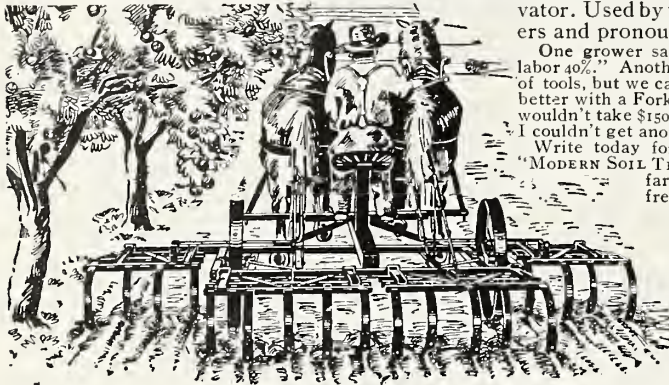
Manufactured By **W. C. EMMERSON & CO., Forest Grove, Oregon**



# FORKNER SPRING TOOTH TILLERS

## WORK RIGHT UP TO YOUR TREES

Cultivate entire surface between rows without disturbing boughs or fruit. Does more work—easier and quicker—and leaves better surface mulch than any other cultivator. Used by thousands of fruit growers and pronounced **indispensable**.



One grower says: "The Forkner reduces labor 40%." Another says: "We have all kinds of tools, but we can do our work quicker and better with a Forkner." Still another says: "I wouldn't take \$150.00 for my Forkner Tiller if I couldn't get another."

Write today for catalog and free book—**"MODERN SOIL TILLAGE"**—invaluable to any farmer or fruit grower. Mailed free. Write today.

### LIGHT DRAFT HARROW CO.

601 Nevada Street  
Marshalltown, Iowa

## Fruit Tree Stocks

Apple, French and Japan Pear, Mahaleb and Mazzard Cherry  
Myrobalan Plum

## Apple and Pear Grafts

Machine wrapped. Quality guaranteed. None better

## Roses

Immense stock of hardy kinds

## Ornamental Trees, Shrubs, Vines

## Gooseberries, Currants, Raspberries, Blackberries

Large stock root cutting plants

### MOUNT ARBOR NURSERIES

E. S. WELCH, Proprietor  
138 Center Street SHENANDOAH, IOWA

### A Complete Line of High Quality Nursery Stock

Always pleased to quote your WANTS

# "BLUE RIBBON"

(EXTRA FANCY)

# "RED RIBBON"

(FANCY)

## Famous Brands of Yakima Apples

Packed under our personal supervision  
Get in touch with us by wire or letter

## Yakima County Horticultural Union

E. E. SAMSON, Manager  
NORTH YAKIMA, WASHINGTON

The Bean Spray Pump Company of San Jose, California, is putting on the market a spray outfit called the "Eureka, the One-Man Power Sprayer" at a very low cost. This outfit is intended for the small fruitgrower who does not care to purchase one of the big power outfits, or, on the other hand, for the grower who has too much of a job on his hands for the ordinary pump. We presume circulars illustrating and giving complete information about the Eureka can be obtained by writing the Bean Spray Pump Company, San Jose, California.

The Zimmerman Steel Company will move from Lone Tree, Iowa, to Davenport, Iowa, where they have erected a new building, which will give them increased facilities for manufacturing stump pullers, farm scales, steel castings and other things in their line. For this purpose they have purchased ten acres of land on which they are erecting a large steel foundry, offices, assembly building, etc., making one of the most complete plants of this kind in the United States.

The Times-Mirror Company of Los Angeles has issued its annual mid-winter number of the Los Angeles Times, which, by the way, is a splendid annual for portraying the beauty of California in a very attractive manner. Such an edition will be a strong factor in bringing people to the Pacific Coast to visit the San Diego Panama-California Exposition at San Diego, and also the Panama-Pacific International Exposition at San Francisco.

The Traung Lithograph Company of San Francisco has just issued one of the most practical calendars that has come to this office. This calendar is a large one, and on each sheet is a small calendar for last month and one for the next month in addition to the current month. It is beautiful and artistic, showing the splendid work done by this house in the label line.

The Hood River Apple Vinegar Company has issued a very attractive leaflet explaining the purity of their method in making cider and vinegar. This can be obtained by writing the company. Already a large demand has been built up for Hood River cider and vinegar, which is of the most excellent quality, made from clean stock and absolutely pure.

Chas. H. Lilly Company of Seattle and Portland has just issued a very attractive catalog embodying practically their full line of supplies of seeds, plants, flowers, nursery stock, fertilizer and sprays, including practically everything that the fruitgrower and farmer use in the way of supplies.

The General Chemical Company of San Francisco has issued a pamphlet with directions for using their sprays in Western orchards, which contains some very interesting reading matter.



## COAST CULVERT AND FLUME COMPANY

*Farmers' Lateral Metal Flumes*

(Providing for Check or Furrow Irrigation)

*Lateral Gates . Pressure and Drainage Pipe*

*Ash Cans, Smoke Stacks, Tanks*

*Troughs, etc.*

Manufactured From "ARMCO" AMERICAN INGOT IRON  
at Portland, Oregon

## THE FAMOUS AETNA BRAND OF PURE LIME AND SULPHUR SOLUTION

Manufactured by an Orchardist of 25 Years' Practical Orchard Experience.

### Extracts From Letters On File

W. K. Newell, President State Board of Horticulture, says: "I am using the Aetna Brand in my orchard and I am sure you are making a good article."

A. C. Goodrich, Commissioner First District: "I have used the Aetna and found every barrel fully up to test."

The Dalles, Oregon, July 10, 1914.—"Results obtained from use of Aetna Brand are most satisfactory and I can heartily recommend its use." (Signed) R. H. Weber, Commissioner Fourth District.

H. C. Atwell, President Oregon State Horticultural Society: "I think there is no better Spray made."

S. J. Galloway, Fruit Inspector Washington County: "After very severe tests I found the 'Aetna' Brand O.K."

White Salmon Valley Fruit Growers' Union: "After using the 'Aetna' Brand we are justified in the belief that there is no superior on the market." (Signed) J. J. Conger, Manager.

Use the "Aetna" Brand for best results. Failure is impossible if you spray right. We absolutely guarantee the "Aetna" Brand to be the best on the market. It costs no more to use the best.

For prices, etc., write

**B. LEIS & SONS, The Aetna Orchards, Beaverton, Oregon**

The Aetna Brand is not sold through Portland dealers.

PORTLAND, OREGON

## PORTLAND HOTEL

The hotel which made Portland, Oregon, famous  
Most Desirably Located. In the Center of Shopping and Theatre District  
Covers a City Block

**Broadway, Sixth, Morrison and Yamhill Streets**

EUROPEAN PLAN—\$1.00 per day and upward

Write for Portland Hotel Booklet

G. J. Kaufmann, Manager

The Schmidt Lithograph Company of San Francisco are mailing to their customers and patrons very handsome calendars, with a convenient arrangement of three months on each page, making a very convenient calendar for ready reference. This calendar is beautifully done in colors, showing the splendid work done by this firm.

F. E. Myers & Bro., of Ashland, Ohio, have just issued their annual calendar, which is a large illustrated sheet of their line of pumps. A man would never realize there were so many different styles of pumps made by any one concern until he looked over this sheet.

The Stark Bros. Nursery, Louisiana, Missouri, has issued the January edition of the "Stark Tree Talk," which as usual contains much interesting reading matter and considerable news.

## HOW TO MAKE MONEY

in California on an investment of \$1,000.00 or less. I will tell you how to double your money yearly. Send 25c for book—ALFRED MITTING, Expert Horticulturist, 8 New Street, Santa Cruz, California.

Mr. Doeller, of the Simpson-Doeller Company, manufacturers of labels, made a visit to the Pacific Northwest in January to confer with their representative, Mr. E. Shelley Morgan, in reference to the label business for the coming year.

James A. Carter, an old seed house of London, England, some time ago opened a house in Boston, Massachusetts, and recently have opened a branch for Carter's tested seeds in the Arcade Building, Seattle, Washington.

The Mitchell Lewis Motor Company, Racine, Wisconsin, has issued a very handsome New Year card, which "Better Fruit" acknowledges with pleasure.

W. Atlee Burpee Company, Philadelphia, again is putting out "Burpee's Annual for 1915," which contains much interesting matter about garden seeds.

GALLIPOLIS, OHIO, January 18, 1915.

Editor Better Fruit:

Please find enclosed check for \$3.80, covering advertising space and my renewal for subscription. I received an answer to my ad. in the next mail after receiving my copy of "Better Fruit," which I think is remarkable. Thanking you, I remain, yours truly,

B. L. ENOS.

The California Fruit News.—In October the California Fruit Grower changed its name to the California Fruit News. This is one of the oldest fruit journals in California, being now in its fiftieth volume. It was established in 1888 by Mr. Brainard L. Rowley, and is now published by his son, Mr. Howard C. Rowley, a man of splendid ability and extremely popular with everyone connected with the fruit industry in the State of California. Inasmuch as the Fruit News is devoted almost entirely to general information, publishing very little about growing fruit, the name seems to fit the publication better than the old one. The California Fruit News is devoted extensively to giving news about the fruit industry that would be a benefit to the fruitgrower and fruit dealer. It is a splendid publication.

Fruit growers and farmers in the past have suffered to some extent by getting impure seeds or sterile seeds. Seed houses, realizing the loss from such poor stock, are endeavoring to supply the trade with pure seeds.

Doubleday, Page & Co., Garden City, New York, have issued a Garden Almanac, containing valuable and instructive reading matter for the farmer, gardener and orchardist.

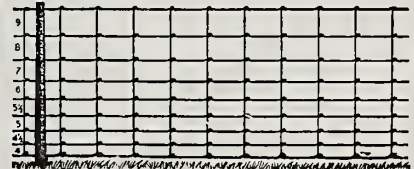
Jno. A. Dreer of Philadelphia has issued a very interesting catalog, "Dreer's Annual."

## Dow Arsenate of Lead

It has been shown in experimental tests the past season in sections where codling moth have been severe that Dow Arsenate of Lead is superior for controlling this pest. The reason—it contains no grit and is a much finer divided article—hence possesses a better covering power. Adopted by the State of Massachusetts for the third successive season for their gypsy and brown-tail moth work.

**The Dow Chemical Company**  
Midland, Michigan

### DIRECT TO CONSUMER



**39-INCH FENCE 28 CENTS A ROD**  
Made of high-grade galvanized wire. Write for catalog and prices  
**NATIONAL FENCE COMPANY**  
Columbia and Water Sts. PORTLAND, ORE.



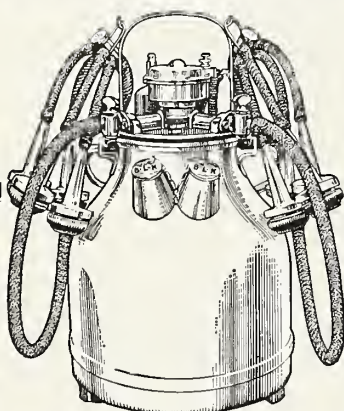


## How much to build?

Now's the time to buy lumber. H-L-F prices on lumber, *direct to you*, lower than ever, now. No time like winter for easy hauling. Roads good—time plentiful. Get our price now on house or barn lumber.

**Send bill of materials** for low winter price. We pay the freight. Guarantee grades, count, satisfaction. If you haven't material list, send for H-L-F House Price—it's free. Answer a few questions. Get our guaranteed prices. Write today.

**Hewitt-Lea-Funk Co.**  
610 Cray Bldg., Seattle, Wash.  
Capital \$1000,000 Not in any Trust or Combine



## The Human Milking Machine

This wonderful machine has ended milking drudgery on hundreds of ranches in the Northwest.

Successfully takes the place of the human hand in milking. The only machine with automatic release, like the pressure of the hand. Absolutely no ill effects to teats or udders. Increased milk yield. Any man can milk from 25 to 30 cows an hour with this machine.

WRITE TODAY for FREE BOOK telling all about this wonderful Milker. Also letters from Oregon ranchers using the B-L-K.

**Monroe & Crissel**

"Everything for the Modern Dairyman."

124 Front Street, Portland, Oregon.

MAIL THIS COUPON

Name .....

Address .....

Number of cows.....

## THE QUESTION OF THE DAY

With the fruit grower is, how can he derive a revenue from his overripe and unsalable fruits?

It can be done. It is being done. How? By the use of the new and up-to-date process of

## DEHYDRATING

Which is the cheapest, quickest and best process ever devised for preserving fruit without changing the taste or flavor; is clean and sanitary. There is always a market for this product. Can be operated by anyone. Capacity to meet all requirements.

For descriptive booklet address

**Luther Vacu-Dehydrator Co.**  
1242 TAYLOR ST., SAN FRANCISCO, CAL.

The W. F. Allen Company of Salisbury, Maryland, has issued an exceedingly attractive catalog containing some very handsome illustrations of strawberries, of which they make a specialty. This catalog will be mailed free upon request.

Gill Bros. Seed Company, of Portland, have just sent out their catalog for 1915, which is a very neat publication, containing a number of vegetable seeds grown in Oregon, of which they make a specialty.

The Luther Burbank Company, Burbank Building, San Francisco, has issued a very handsome catalog, which contains many illustrations of Burbank's famous specialties.

### Hogs in Connection With Fruit

A great many fruitgrowers are raising hogs in connection with their orcharding, which is a splendid idea. All orchards require cover crops in order to maintain humus and nitrogen in the soils, and clover and alfalfa make fine feed for hogs. A great many of the farm publications run stock columns which contain good information about hog raising. There is one excellent publication devoted to hog raising published in Chicago, Illinois. It is the American Swineherd, well worth every fruitgrower's subscription who is engaged or expects to engage in the hog industry. "Better Fruit" offers a clubbing list for the American Swineherd and "Better Fruit" for \$1.25.

### Dairying and the Orchard

The year 1914 accentuates the importance of diversity for the fruit grower. It always has been and always will be true that occasionally fruit prices will be low; then if the fruit grower has some other product selling at fair prices his financial condition is comfortable. There is another reason for diversity, and that is that the fruit crop brings in money only once a year, therefore the fruit grower ought to have side lines that bring in money at other times. One of the most popular diversity lines with fruit growers is dairying, because it pays a good profit, brings in steady money and fits in with the orchard business without interference. Every orchard needs cover cropping to maintain the humus content and nitrogen supply. Alfalfa and clover are ideal crops for this purpose and make the best kind of feed for cows. Already some orchard districts have established co-operative creameries. Fruit growers are progressive people and therefore are going at dairying in an intelligent way, buying the best productive, high grade cows, establishing cream routes, putting in sanitary equipment, cream separators, and will follow with milking machines where the herd is large enough. Therefore we look forward to the orchardist becoming a successful dairyman and improving his financial condition, increasing his income, which can be done at a small expense, as he already has the land and water to grow the feed.

## OUR SPLENDID CLUBBING OFFER

"Better Fruit" offers to its readers one of the finest lists of clubbing offers ever placed before the public. These rates do not apply to Canada, owing to extra postage.

Review of Reviews.....	\$3.00
Everybody's .....	1.50
Better Fruit .....	1.00
Total .....	\$5.50
All for .....	3.60

World's Work .....	\$3.00
Scribner's .....	3.00
Better Fruit .....	1.00
Total .....	\$7.00
All for .....	5.25

Outlook .....	\$3.00
Ladies' Home Journal.....	1.50
Better Fruit .....	1.00
Total .....	\$5.50
All for .....	4.90

Woman's Home Companion.....	\$1.50
World's Work .....	3.00
Better Fruit .....	1.00
Total .....	\$5.50
All for .....	3.95

Fruit and Produce Distributor....	\$2.00
Better Fruit .....	1.00
Total .....	\$3.00
Both for .....	2.00

Delineator .....	\$1.50
Everybody's .....	1.50
Better Fruit .....	1.00
Total .....	\$4.00
All for .....	3.10

Harper's Magazine .....	\$4.00
Good Housekeeping .....	1.50
Better Fruit .....	1.00
Total .....	\$6.50
All for .....	5.45

Gleanings in Bee Culture.....	\$1.00
Good Housekeeping .....	1.50
Better Fruit .....	1.00
Total .....	\$3.50
All for .....	2.65

Ladies' World .....	\$1.00
Modern Priscilla .....	1.00
Pictorial Review .....	1.00
Better Fruit .....	1.00
Total .....	\$4.00
All for .....	2.50

Today's .....	\$0.50
Ladies' World .....	1.00
McCall's .....	.50
Better Fruit .....	1.00
Total .....	\$3.00
All for .....	2.00

Pacific Homestead .....	\$1.00
American .....	1.50
Better Fruit .....	1.00
Total .....	\$3.50
All for .....	2.50

Northwest Poultry Journal.....	\$0.50
Good Housekeeping .....	1.50
Everybody's .....	1.50
Better Fruit .....	1.00
Total .....	\$4.50
All for .....	3.60

Oregon Agriculturist .....	\$1.00
Northwest Poultry Journal.....	.50
Better Fruit .....	1.00
Total .....	\$2.50
All for .....	1.85

Hoard's Dairyman .....	\$2.00
Woman's Home Companion.....	1.50
Better Fruit .....	1.00
Total .....	\$4.50
All for .....	3.15

Western Farmer .....	\$1.00
Northwest Poultry Journal.....	.50
American Bee Journal .....	1.00
Better Fruit .....	1.00
Total .....	\$3.50
All for .....	2.35

Through lack of space we are unable to give a more extended clubbing list. Rates on all magazines will be given to any of our subscribers by writing "Better Fruit."



# Bolton Orchard Heaters

27 Cents Each

**WE PAY THE FREIGHT**

## Capacity:

2 Gallons.

## Delivery:

We manufacture in San Francisco, California, and can make prompt shipment.

## Important Information

Deciduous fruit growers do not need anything larger than a two-gallon heater with the proper burning time. A larger heater produces no more heat. We introduced the first orchard heater in Oregon and Washington and we have always advocated a large number of small fires to the acre to give good protection.



## Burning Time:

10 Hours.

In 1910 and 1911 we sold 250,000 Bolton Orchard Heaters in Oregon and Washington and every grower saved his crop.

## The Frost Prevention Company

Merchants National  
Bank Building

San Francisco, Cal.

WE MAKE A SPECIALTY OF

# Catalogs, Booklets and Circulars

FOR

*Nurserymen, Fruit Growers, Manufacturers  
and Selling Agents*

Write us for specifications and  
information. Quality and Service

**F. W. BALTES AND COMPANY**

*Fine Printing* PORTLAND, OREGON

## Spraying and Pruning to Combat Powdery Mildew

[Office of Information, United States Department of Agriculture.]

AS a result of experiments in the Pajaro Valley of California the United States Department of Agriculture is recommending certain spraying and pruning treatments to combat the powdery mildew, an apple disease that seriously menaces the apple industry west of the Rocky Mountains. The powdery mildew occurs occasionally at least in nearly all parts of the United States. It is only in the West, however, that it has done any considerable damage, particularly in the Pajaro Valley, where the annual output of apples is about 3,500 carloads of packed fruit.

A new bulletin entitled, "Apple Powdery Mildew and Its Control in

the Pajaro Valley," outlines three distinct phases of control method as follows: (1) Foliage spraying with iron-sulphid mixture, precipitated sulphur, or sulphur in some other very finely divided form. (2) Winter pruning of trees—(a) for the purpose of obtaining the general stimulating effects that come from pruning at that time, and (b) directed particularly toward the eradication of mildew twigs. (3) Winter spraying with some spray that has the effect of inducing a vigorous foliage growth in the spring.

The practice of careful and thorough summer spraying year after year will gradually bring about a much-improved condition of the trees, but for the best

results the entire method, as outlined above, must be followed. This advice as it stands is intended only for the Pajaro Valley section, but the recommendations, it is believed, may be varied slightly to suit the requirements of other apple-growing districts in which the disease has become sufficiently prevalent to require attention. In some sections, for instance, summer spraying alone may provide a satisfactory control of the disease. In using sulphur great care must be exercised to prevent such an over-application as to burn the fruit. The bulletin is very explicit in its directions as to the use of sulphur. Growers in the Pajaro Valley and other districts affected by the mildew should obtain the publication before using the methods outlined above.

It seems probable that a cool, foggy climate makes apple foliage more susceptible to powdery mildew. The fog moisture also tends to dissolve such sprays as may be used, so that spray materials must be more carefully applied. Where the foliage is frequently subjected to washing rains the injurious substances from the spray materials are washed off, but in the Pajaro Valley the fog dissolves the substances and the leaves absorb the destructive elements which injure the foliage. This has been especially noticeable in the case of arsenic and paris

## FEATHERWEIGHT Spray Nozzle and Rod

**Best, Lightest,  
Cheapest**



Size of  
Nozzle

Invented by a fruit grower of 15 years experience in spraying.

No tired arms from handling it; a pleasure instead of a burden to carry. You will like it and praise it to your neighbors. Nozzle from 2 to 20 times lighter than other nozzles; rod from 2 to 4 times lighter than other rods.

**\$1.00 for Nozzle and Elbow**

**\$1.75 for Rod**

Your money back if it is not satisfactory.

**F. P. FRIDAY**  
HOOD RIVER, OREGON

## Store Your Apples in Spokane

**The Natural Storage Center**

Take advantage of storage in transit rate and the better market later. Write us for our dry and cold storage rate and information.

**Ryan & Newton  
Company**

SPOKANE, WASHINGTON



# The New Agriculture

## WRITE FOR THIS FREE BOOK

### FOR

2,000 years most farmers have cultivated only 6 to 8 inches of soil. They have spent millions of dollars adding to these 6-inch farms plant foods, such as potash, phosphorous and lime, that already lay in the subsoil waiting to be made available.

### VERTICAL FARMING

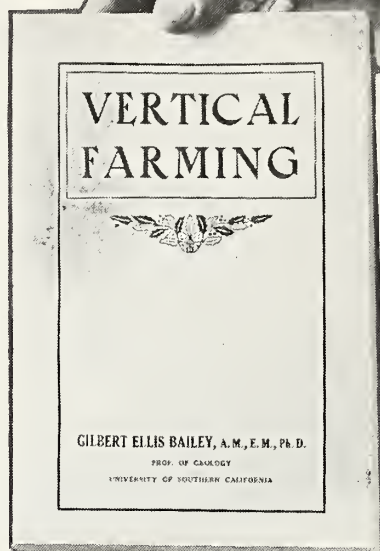
makes available tons per acre of new plant food, ensures abundant moisture and largely increases crop yields.

### DR. G. E. BAILEY

Geologist at the University of Southern California, has prepared a reading course of instruction in soils and vertical farming. We have printed it in a well illustrated book. It will be mailed

### FREE ON REQUEST

to anyone owning a farm in the United States. Get this book about soils. Work your farm to its full capacity. Know your land. Learn its composition. Use the fertilizers nature is storing beneath your 6-inch farms. Send a postal request today for Vertical Farming Booklet 338-F. Be sure to state the acreage of the farm you own.



## Du Pont Powder Co.

*Pioneer Powder Makers of America*

Established 1802

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CENTER AT WHICH THE TYPE IS DIRECTED IS AT REST  
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Ball Bearing; Long Wearing

In an **L. C. Smith & Bros. Typewriter** the spot on the paper which is to receive the type impression is stationary at the instant the type hits. The carriage does not bob up and down when the shift is made to write capitals. Why? Because the **type** is shifted—not the **carriage**. The only movement of the carriage is back and forth on its closely adjusted ball bearing runways—and this does not take place while the print is being made. There is no lifting of the carriage.

This is one reason why L. C. Smith & Bros. typewriting is free from blurs and every letter in the right place. Ask for demonstration.

### L. C. Smith & Bros. Typewriter Co.

Home Office and Factory  
SYRACUSE, N. Y.

Branches in all Principal Cities

Portland Branch Office  
306 OAK STREET

green; even the best grades cannot be used in this valley. Bordeaux mixture, however, does not cause such severe injury in the West as it does in the humid Eastern States, but even this mixture must not be used too frequently. Lime-sulphur solution of a strength commonly used with success throughout the East for summer spraying cannot be used in the Pajaro Valley for spraying without injuring the foliage. This is true of other soluble sulphids which naturally suggest themselves as mildew sprays.

Sometimes as much as 90 per cent of the foliage on trees of susceptible varieties in the Pajaro Valley are attacked by this disease. The orchards in this district suffer more from the mildew than do any other large apple-producing districts in the United States. The importance of giving proper attention to control it is increased by the fact that the disease comes back regularly year after year and gradually acquires a stronger foothold if its progress is not checked. The mildew occurs most commonly on the undersides of the leaves. The affected areas are white or grayish, and the term "powdery" very well describes their mealy appearance. The diseased spots may vary in size from a point invisible to the naked eye to patches three-fourths of an inch in diameter, and several of these may become established on a single leaf. In a large percentage of cases the entire upper and lower surfaces of the leaf become involved. Mildewed leaves are crinkled and stunted and often very much narrowed, owing to the fact that the growth and expansion of the leaf tissue is checked in the area covered by the fungus. In the Pajaro Valley the disease makes such rapid progress during the spring and summer that by the end of the leaf-forming season it is difficult to find normal, healthy leaves in any unsprayed Yellow Newtown or Yellow Bellflower orchard. The disease attacks the foliage and current year's twigs' growth, but rarely infects young fruit and only occasionally attacks a flower-cluster bud. When it does attack a cluster the individual flowers are usually reduced in size and much deformed.

No varieties of apples grown in the Pajaro Valley are immune from powdery mildew, but some are more seriously affected than others. The relative susceptibility of different varieties will probably be found to vary in different apple-growing districts, depending, among other factors, upon the effect which the local climatic and other conditions have on the foliage vigor. In general, the varieties that produce strong, vigorous foliage are less susceptible than the more delicately growing ones. In this connection it is interesting to note that in the Pajaro Valley the Yellow Newtown, which is one of the most susceptible varieties, can apparently be made much less susceptible if the vigor of the foliage be increased by stimulation such as comes from spraying with very finely divided forms of sulphur. A list



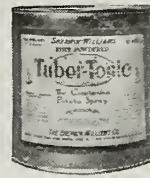
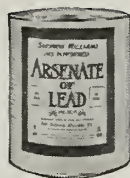
of the most susceptible varieties grown in the Pajaro Valley includes the Yellow Newtown, Yellow Bellflower, Smith (Smith's Cider), Missouri (Missouri Pippin), Esopus (Spitzenberg) and Gravenstein. The varieties that are less severely attacked are the White Pearmain (White Winter Pearmain), Winter Pearmain (Red Pearmain), Red Astrachan, Rhode Island Greening and Langford. Details regarding the preparation of the iron-sulphid mixture and spraying schedules, as well as pruning methods, are given in the bulletin, which apple growers to the west of the Rocky Mountains in regions affected by mildew should find profitable reading. It may be had free for the asking as long as the Department's supply lasts.

## Don't Spray in Bloom

By John Pashek, The Dalles, Oregon

SPRING is on the approach and the spraying season will soon be here. And the old story ever new is now in place. A word to the wise is sufficient; and I hope that our orchardists and fruitgrowers will take to heart what I offer here. While it is true that I am in the bee business, and that my heart and soul are in that industry, no one who has studied the matter can deny that the fruitgrowers need the bees as much, if not more, than the bees need them. But what I want to make clear is the importance of spraying the fruit trees in their proper seasons. There are still a number of fruitgrowers in this vicinity who still spray their trees while in blossom, thus not only poisoning the bees and other necessary fertilizing insects but practically killing the goose which lays their golden eggs—their fruit yield.

In speaking of the evil of spraying trees while in blossom, Professor H. A. Surface, among other things, very decidedly says: "No trees, shrubs, bushes or vines of any kind should ever be sprayed while in bloom. Please tell this to your neighbors. Please tell it to the editors of all the papers. Proclaim it from the housetops. Let everybody learn that to spray a tree while in bloom is liable not only to injure the fruit and thus help to destroy the crop, but also kill the bees and other insects that are absolutely essential in carrying pollen from fruit to fruit and thus help fertilize the blossoms and insure a crop. If there is any one thing against which there should be definite and emphatic legislation in this state at the present time it is the ignorant and absurd practice of a few persons who yet appear to spray in bloom. Please help us to educate the people against this practice. Education as practical and rational as this would do much more than legislation, as growers, if educated on this point, would understand it is greatly to their disadvantage to spray while in bloom. This fact should be placed before each school teacher and kept on the walls of each school room of the state. Let us make it strong. Tell every school



## SPRAYING *Made easier, quicker better, cheaper*

Three Sherwin-Williams Insecticides and Fungicides are now put up in dry powdered form. They are lighter and more convenient to handle. They will not freeze, dry out or spoil, and their improved chemical make-up gives a more effective spray.

**S-W Dry Powdered Arsenate of Lead**  
Dry powdered form gives maximum killing power at minimum expense.

**S-W Dry Powdered Tuber Tonic**  
A three-in-one potato spray that kills leaf-eating insects, prevents blight and acts as tonic to the plant.

**S-W Dry Powdered Fungi Bordo**  
An extremely effective scientific fungicide of exact chemical make-up, eliminating all uncertainties of home-made or commercial Bordeaux Mixtures.

**Our Lime Sulphur Solution is particularly effective for San Jose Scale**

Send for our *Spraying Literature*

### THE SHERWIN-WILLIAMS CO.

Insecticide and Fungicide Makers  
707 Canal Road, Cleveland, Ohio



LESLIE BUTLER, President  
TRUMAN BUTLER, Vice President  
C. H. VAUGHAN, Cashier

Established 1900

## Butler Banking Company

HOOD RIVER, OREGON

Capital . . . . . \$100,000.00

4% Interest Paid in our Savings Department

WE GIVE SPECIAL ATTENTION TO GOOD FARM LOANS

If you have money to loan we will find you good real estate security, or if you want to borrow we can place your application in good hands, and we make no charge for this service.

THE OLDEST BANK IN HOOD RIVER VALLEY



**RHODES DOUBLE CUT PRUNING SHEAR**

Pat'd June 2, 1903.

**RHODES MFG. CO.,**

520 S. DIVISION AVE., GRAND RAPIDS, MICH.

**THE only** pruner made that cuts from both sides of the limb and does not bruise the bark. Made in all styles and sizes. We pay Express charges on all orders. Write for circular and prices.

## Ground Phosphate Rock

The Natural Plant Food and Permanent Soil Builder

1,000 pounds per acre once in each four years will cost about \$1.00 per acre per year. At Pennsylvania State College \$1.05 invested in Rock Phosphate gave increased yields of \$5.85—over 500%. At Maryland Experiment Station \$1.96½ gave \$22.11—over 1,000%. At Ohio Station each dollar paid for itself and gave \$5.68 profit. At Illinois Station \$2.50 gave the same return as \$250 invested in land.

Each ton contains 280 pounds of phosphorus, not rendered available artificially by high priced destructive acids, but so finely ground as to become available in nature's own way.

### United States Phosphate Co.

228 West Broadway, SALT LAKE CITY, UTAH

Write for Literature

"Perfection of Fineness in Grinding," our motto



# ACME Foot Lift Weeder

**A**RIDING orchard cultivator and mulcher. Gets all the weeds—large and small. Used in orchards or for summer fallowing; keeps down weed growth and properly mulches surface soil. **Foot Lift Lever** enables operator, on seat, to clear off weeds that may gather while working. All steel construction. Light draft. Depth of cut adjustable. Price right.

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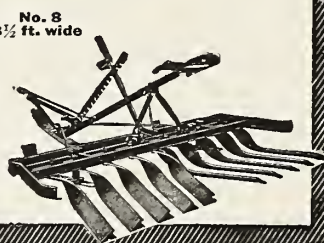
### What a user says about it:

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Dear Sirs:—I take pleasure in recommending the ACME No. 8 Weeder as the best implement I ever used for killing weeds and pulverizing the ground and I have used all of them. \$100 would not buy mine if I could not get another one.  
(Name on request)

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Mosier, Oregon, Aug. 22, 1914  
Gentlemen:—I consider the Acme Foot Lift Weeder the best tool for cultivating orchards that I ever used, and as a weed killer it certainly is perfection.  
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Apples handled in all European markets at private sale. Checks mailed from our New York office same day apples are sold on the other side. We are not agents; **WE ARE SELLERS.** We make a specialty of handling **APPLES, PEARS AND PRUNES** on the New York and foreign markets. Correspondence solicited.

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WHEN WRITING ADVERTISERS MENTION BETTER FRUIT

teacher in your county to write on the blackboard in capitals: 'Never spray while in bloom.' Another reason for not spraying while in bloom is that there is no need of it. There are no pests that must or should be killed or prevented at this time. It will not do anywhere near the amount of good that it would to spray before the blossoms appear, and again after they fall."

That bees are an important asset to the success of fruit raising is now proven to the satisfaction of the prominent orchardists in our own immediate vicinity. Several skeptics tried the use of bees as pollenizers last year and the result is such that they are resolved to continue using them from now on. Not only are bees a necessity to fruits but they are a great aid to berries and vegetables. And this is vouched for by Eastern experts who are reputed to know. In fact so enthusiastic have some Eastern fruit raisers become over bees that one prominent grower in Ohio declares that with the help of bees his state can be made a better apple-raising section than is Oregon and other Western States. So if Oregonians mean to maintain their records they had better arouse to action or they may soon find the East has caught them napping. It will stand repeating. Do your spraying before the trees blossom. During the blooming period let the bees get in their much-needed work. And then when the blossoms are well dried up spray again, if necessary. And remember that the bee is your friend, and that it is as important as the rain and sun in their proper seasons.

## Growing Alfalfa in Washington

What may we expect? (1) Areas receiving considerable runoff from higher lands or light sub-irrigation are found occasionally within the rainfall belt of five to fifteen inches that often produce two good crops amounting to three or four tons per acre, but are no guide to what may be expected with the natural rainfall. They are misleading when so taken. (2) Where the rainfall is less than 15 inches and there is no runoff or sub-irrigation, one fair to light crop annually is all that should be expected if every precaution in the culture of the crop is observed. This is better than one fair wheat crop every four to six years. (3) With less than twelve inches rainfall, farmers are advised to experiment with small tracts until they learn what they can do. Considerable risk is attached to establishing the crop with less than twelve inches annual rainfall.

What are the requisites for Success? (1) Seed of the highest quality. (Seed will be examined without charge by the Department of Botany, State College, Pullman.) (2) A first-class summer fallow, offering a good supply of readily available plant food, stored moisture, freedom from weeds. A poor summer fallow is not safe. The young plants need every advantage. (3) No nurse crop. (Where the soil drifts a



nurse crop would be necessary, but the success of alfalfa under such conditions is very doubtful.) (4) Seeding with a drill, as described in latest bulletin by the State College. (5) Very thin seeding, preferably in rows 30 to 42 inches apart for cultivation. (6) Thorough cultivation every year. (7) Care not to pasture close at any time.

We would strongly urge farmers throughout semi-arid belt to give alfalfa a careful trial. As a forage and soil-improving crop for such conditions it is of the highest rank. Popular bulletins Nos. 42 and 49 discuss the principles of dry-land farming and Extension Bulletin No. 1 discusses the details of growing alfalfa without irrigation. These may be secured from the Experiment Station, Pullman, Washington, upon request.—Geo. Severance, Agriculturist, State Experiment Station, Pullman, Washington.

### Home-Made Apple Vinegar

Apple vinegar or cider vinegar is now made by commercial plants to such an extent that the home-made product is rarely seen and has but little place in the market. Apple cider will go through the normal process of fermentation and develop vinegar of splendid quality if given the proper temperature and time for development. As the cider is stored in the barrels it should be exposed as much as possible to the air and be kept at a temperature above 80 degrees and below 100 degrees. The best results will be obtained if the material is kept at a temperature ranging between 80 and 90 degrees. At this temperature it requires approximately a year for cider to develop enough acid content to pass as first-class vinegar. It should have between 4 and 7 per cent of acid content, and with the process of making being that of slow ferment in barrel quantities, it will seldom reach 6 per cent of acid content. Ordinarily the vinegar that is made by being permitted to ferment in barrel quantities must be kept in a basement or cellar storage where the high temperature can be obtained. It does not kill the ferment in the vinegar to pass below 80 degrees in temperature, but it retards its action, and the longer the material is in the process of making the less valuable it is and the more difficulties are liable to be encountered in the work. The best results will be obtained if the head of this barrel is taken out and the barrel left entirely open. It can be stirred to advantage once in a while, but ordinarily the process of letting it stand entirely undisturbed will develop a very clear and satisfactory grade of material.

The mother of vinegar that develops ordinarily on the top of the barrel is of no special advantage after it assumes the form of a condensed or hard cake. As long as it is in a loose, slimy form it will work fairly rapidly, but as soon as it assumes the caked form it may as well be removed from the barrel. Ordinarily if touched or

## A Dreadnaught in Sprayers

—such is our "Dreadnaught" Duplex Power Sprayer. It delivers a hurricane of death to orchard pests of all kinds for years and years, without a hitch. In a recent test a "Dreadnaught"—made just as we'd sell it to you—worked against 225 lbs. pressure for 800 hours, pumping a quarter of a million gallons, with no care except for lubrication and repacking. If wear had been taken up, the pump would undoubtedly have operated 2,000 to 3,000 hours. This test proves that with ordinary care the "Dreadnaught" should last ten seasons or more. Requires less than 1½ H. P. to deliver rated capacity—5.3 gal. per minute. Has heavy brass plungers, outside packed; non-corroding; uses either rotary or reciprocating agitator; all parts accessible; width 18½ in., length 22 in., height 18 in.—powerful, compact, durable. Ask your dealer to show you

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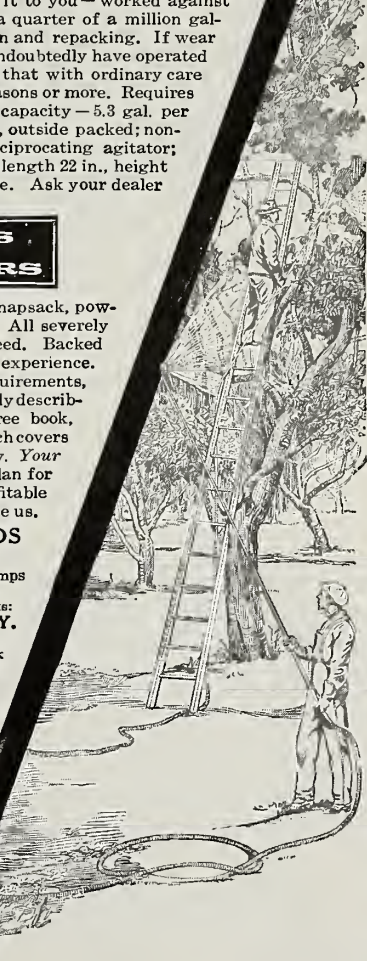
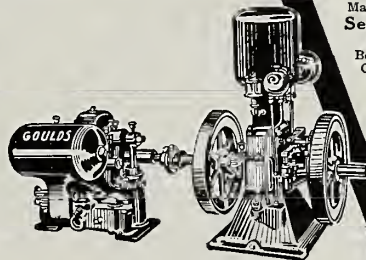
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**ALL GRADES**

**Pear Seedlings**—French (American-Grown and Imported)  
Japan and Kieffer (American-Grown)

**Apple Seedlings**—American-Grown and Imported, straight or branched  
for budding or grafting, Doucine and French Paradise

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against Gypsy, Brown-tail and Tussock Caterpillars, Canker Worms, Climbing Cut Worms and Ants. It is also effective against any crawling insects attacking fruit, shade or ornamental trees.

### Band Trees About Two Weeks Before Insects Appear and Get Best Results

Easily applied with wooden paddle. One pound makes about 10 lineal feet of band. One application stays sticky 3 months and longer—outlasting 10 to 20 times any other substance. Remains effective rain or shine. Won't soften—won't run or melt, yet always elastic, expanding with growth of tree. No mixing, simply open can and use. Will not injure trees.

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Tree Tanglefoot is superior to anything on the market—it is the best application after pruning or trimming. It will water-proof the crotch of a tree or a cavity or wound in a tree, when nothing else will do it.

### Sold by All First-Class Seed Dealers

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pressed down on one side it will sink to the bottom of the barrel. The live, active mother of vinegar, when collecting, appears as a thin or mucilaginous gelatine-like mass, and is rapidly reproducing the ferment yeast that is making the vinegar. It is not necessary in all cases to use this mother of vinegar to start the process of fermentation. It is a good plan, however, to use small quantities of it for placing in each barrel of cider to start the process of fermentation. If this is not done a great many different kinds of bacteria will develop in the cider, and not all of these will tend directly to the manufacture of acetic acid, which is the valuable acid in vinegar. The home process of vinegar manufacture is slow, but easily handled, and can in a small way be carried on very satisfactorily.—O. M. Morris, Horticulturist.

### Washington Horticultural Inspector Reports

The report of the District Horticultural Inspector for the State of Washington, giving a statement of the carloads of fruits and vegetables used by Seattle, a city of about 300,000 people, is very significant, and one that should be studied by all fruitgrowers and truck gardeners of the Northwest. Attention is called to the fact that Seattle consumed 727 cars of apples, and of oranges, lemons and bananas Seattle consumed 1062. Why? Why do the apple growers of the Northwest allow the consumption of citrus fruits to exceed the consumption of apples? It is a matter for serious thought. The apple is the "King of all Fruits," and certainly can be supplied from the Northwest by the orchards within a stone's throw of Seattle far cheaper than bananas, oranges and lemons, that have to be shipped long distances.

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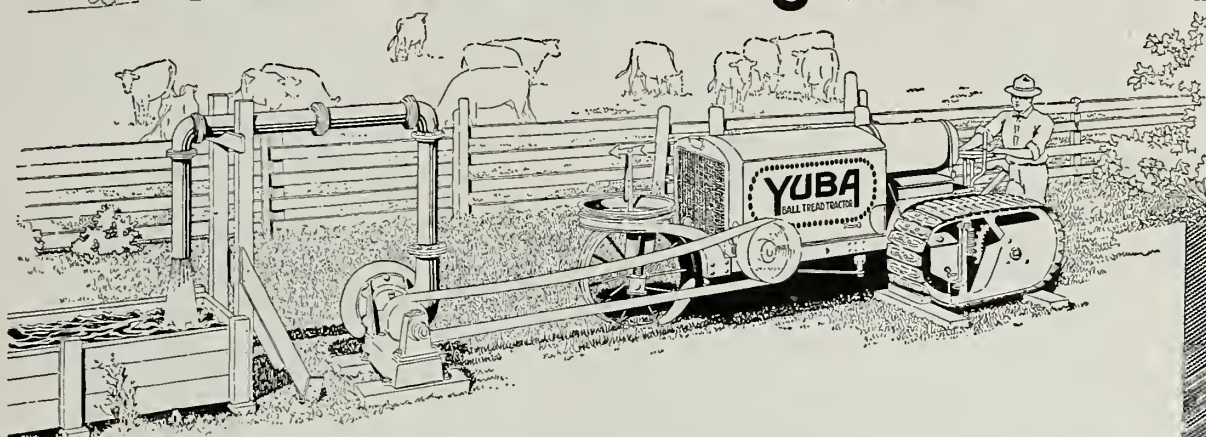
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Directly in rear of the radiator is a cross-shaft connected to the motor by beveled gears running in oil. The starting crank is on one end of this shaft; on the other end is a stationary pulley. This shaft is not an after-thought, nor is it ornamental. Every Yuba Ball Tread Tractor has one and when the operator needs it, he uses it.

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BALL TREAD TRACTOR

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Works, Marysville, California

## Apple Scab—Where Most Prevalent

By Professor O. M. Morris, State Agricultural College, Pullman, Washington

**T**HIS disease is too well known to require a careful description. It is distributed over every district that grows apples and has sufficient rainfall to grow the crop without irrigation. The districts that have the most cloudy, damp, rainy days during the growing season ordinarily are the ones that have the greatest amount of scab-infested fruit. In the Northwest

this disease is most prevalent in the Coast regions, in the highland districts of the Rocky Mountain region and in the highland on the east side of the Cascades.

The disease works on the fruit, foliage and twigs, and is distinctly destructive to the commercial value of the fruit. The amount of damage done to the foliage and to the vigor of the

trees in general by reason of the attacks on the foliage cannot be so easily and distinctly measured. That great damage is frequently done cannot be doubted from the fact that the foliage is so badly damaged that it drops from the trees in the middle of the growing season. The damage to the twigs is less apparent, if there is any distinct damage, further than that of furnish-






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Good Tools make good pruning; keen sharp edges make smooth wounds which heal quickly and lessen danger from wood-destroying insects and fungi.

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Compound Lever No. 4 Jointed Pole Pruner, 16 feet.....	3.50
No. 777—Two-hand Pruner.	2.00
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Where do the poultry profits go? Have you ever figured this out? We have made an exhaustive study of this important problem and the answer is in our new Poultry Book, just off the press. Send 10c for a copy, today, and we will enclose our Cash Value Coupon. The book is worth several dollars to the poultry owner.

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ing infectious material to be spread over the fruit and foliage. As the disease appears on the fruit it is usually very distinct in its appearance, and when once recognized can always be distinguished from any other disease or trouble that may appear on the fruit's surface, except in some cases it is impossible to distinguish on the mature fruit whether the scarred surface is a result of scab or frost injury. The frost injury usually occurs in larger areas, but that does not always make a clear mark of distinction, and it is doubtful whether even a microscope examination could determine clearly whether the damage is done by frost or by scab. This season frost has done considerable damage to fruit in some sections, and there is no doubt that some of the disfigured fruit should be credited to the action of frost and not to the action of scab, although scab be present in the orchard. This disease when once established in an orchard does not occur with regular annual severity. Some years it will be very bad and probably the following year very slight damage results from its action. In some cases it has been so light that it was difficult to distinguish from the crop which trees had been sprayed and which had not been sprayed. The frequency of such experience has led some fruitgrowers to the belief that spraying is useless. There is no reason, however, to doubt but that careful regular spraying will keep this disease practically under control one year with another, even when the year of great prevalence occurs.

The spores of the disease become active in the early spring and what are called hold-over spores are distributed on the first new rapidly-growing tissue that is exposed as the leaf buds and blossom buds are unfolding. The first infection usually takes place before the blossoms have opened. The first spores that find lodgment on the green tissue grow and develop rapidly. It is only a few days or weeks at most until these new infections are producing spores, and from this time on as long as moist, cool or favorable weather for the spread of the disease exists, there is a continuous seeding and maturing of scab. There are no distinct seeding and fruiting times to compare with the different broods of the codling moth, but it is a continuous process, checked only by materials that may be sprayed upon the plants or by dry summer weather, which produces the same result. It is not uncommon for the greatest spread of scab to take place in July or August, or even after the first of September under favorable circumstances. It seems to be impossible to entirely eradicate this disease from an orchard when it is once established, and the only method that gives results is continuous, watchful work that aims to hold the disease in check. In the orchards where it is established it is not sufficient to spray thoroughly once or twice in the spring and then if no scab is evident two or three

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weeks after, to assume that there will be no scab during the remainder of the year. It may develop slowly, and then with a very favorable turn of weather spread so rapidly that it will practically destroy the entire crop of fruit.

The prevalence of the disease seems to have no relation whatever to the vigor of the trees; to their rate of growth; to the character of soil upon which they are growing, or to the character of fertilizer that has been used in the orchard. At present there seems to be no known method of treatment of the trees that will modify their resistance or susceptibility to the attacks of the disease on twig, foliage or fruit. These are independent factors. So far as we can determine at the present time the resistance of the trees to the attacks of the disease depends, first, upon the individual character of the variety and, secondly, upon the opportunity for spread of the disease as modified by source of infectious material and weather conditions. Apple scab does not seem to be directly associated with the action of any fungi nor directly with the action of the attacks of any insects, so that the disease must be combated directly, and there is very little that can be done in an indirect way.

There are two lines of work commonly undertaken to prevent the appearance of this disease on the fruit. These two methods of disease control, however, are not independent of other lines of orchard management, and in nearly all cases can be conducted as a part of the orchard practice with very little special attention. It so happens that there are other pests that must be destroyed, and in contention with these other troubles it is not ordinarily necessary to make special applications of sprays or conduct other lines of cultural operations as special means of attack on the scab. The first process of combating the scab is that of destruction of infectious material. This cannot always be carried out in practice as fully as it can be advocated in theory. For instance, the disease appears to a very great extent on the twigs of the McIntosh apple. It is not known to what extent this twig infection results in the hold-over form producing the spores in the spring, but it would be impracticable to undertake to cut off and destroy all infected twigs. It is not impracticable in all locations to undertake to destroy all windfall and scab-infected fruit left in the orchard or piled as culls around the packing houses; nor is it always beyond the limits of good practice to undertake to plow under or in some other way destroy the scab-infested foliage. This can frequently be done, and I am convinced that in the rainfall sections of the Northwest it is not only a possible practice but in most cases would be a very profitable one. I do not believe that this can be carried out independently of all other points of orchard practice, but it must be con-

## Planet Jr. Orchard Cultivator

For the fruit-grower who wants maximum profits this No. 41 Planet Jr Orchard and Universal Cultivator is an absolute necessity in the orchard, vineyard, or hopyard. Its strong, durable construction and lasting service make it the most economical orchard cultivator you can buy.

This No. 41 has strong, light frame, low wheels, and tongue, all of steel. Is equipped with fruit-tree shield and side-hitch for low trees.

J. E. Nish, Rialto, Cal., writes: "Have used your Planet Jr Orchard Cultivator for 15 years. Remarkable what a machine it is. To my mind it has no equal."

It carries teeth, sweeps, furrowers, plows, and special weeder attachments. Works deep or shallow, and cuts from 4 to 6½ feet wide. Convertible into disc-harrow and alfalfa cultivator. Can be fitted with fore-carriage; also spring-trip standards, and irrigation steels.

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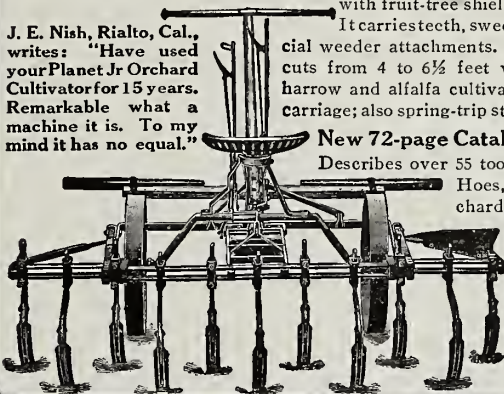
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## NITRATE OF SODA

is the king of all fertilizers. It is as cheap and is better than other fertilizers. It not only enriches the soil, makes trees healthy and strong, produces better fruit, but it

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It is especially adaptable to all orchard needs, because it can be used both as a spray and as a fertilizer. It contains 15 per cent of nitrogen, which is the principle base of all fertilizers, and this nitrogen is immediately available for your use.

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To San Francisco { \$35.00. Return limit 90 days  
and return { \$30.00. Return limit 30 days

To San Diego { \$52.25. Return limit 40 days  
and return { \$61.50. Return limit Six months

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The Exposition Line 1915



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 Over 700 illustrations of vegetables and flowers. Send yours and your neighbors' addresses.  
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 AND JUST ONE MAN ON THE JOB WITH A  
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 Pulls itself up the steepest hill and over the roughest ground. One man writes he saved 60 ribs in 10 hours. Another saved 60 cords in 8 hrs. Another saved 30 cords in a day. Another writes his machine will climb a tree. **THERE IS MORE YOU SHOULD KNOW.**  
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 Write for Testimonials and Catalog D-5

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**WHITTIER COBURN CO. S.F. SOLE MFRS.**

**SPRAY**  
 The Morrill & Morley Way  
 Use an Eclipse Spray Pump.  
 Used by the U. S. Department of Agriculture. Its construction is perfect. Illustrated catalogue free.  
**Morrill & Morley Mfg. Co.**  
 Box 12 Benton Harbor, Mich.  
**Eclipse Spray Pump**

sidered as a part of the entire work, and where possible should be determined upon and carried out, unless there are some special reasons why fall plowing could not be of value. It is not enough to plow this material under, but the soil should be so well worked down that the leaves will decay before they are brought to the surface the following spring by the process of tillage.

Spraying for the purpose of directly combating the disease is a very common practice and must be depended upon for the larger part of the possible success that may be attained in the scab-infested districts. Winter spraying is essential and has a very beneficial effect in other ways aside from its importance in controlling scab. But where the scab problem is one of the most important, the winter spraying can be deferred until about the time the buds are breaking open in the spring. Many people have found it to their advantage to do their winter spraying after the buds are showing pink. In some sections lime-sulphur is used for the control of scab, to which is added lead arsenate for the control of the bud moth, and black-leaf "40" for the control of aphids. A three-per-cent oil emulsion is sometimes added to this already greatly varied spray concoction, with splendid results. This last mixture has been used more in California than anywhere else. A very effective solution for the early spray is composed of summer-strength lime-sulphur, to which is added arsenate of lead for the codling moth and black-leaf "40" for the aphids. This mixture in some respects will be slightly deteriorated because of the various compounds placed in the tank at once, yet by strengthening each a little it has been found cheaper and more satisfactory from the fruitgrower's point of view than giving several applications using one or two materials at a time. Whatever the results may be from a laboratory or technical point of view, it is the actual amount of clean fruit that the orchardist is working for, and this is the only sound basis for approval or condemnation of any spray material or practice.

The crop must be watched throughout the growing season, and the appearance of any new spots of scab on either fruit or foliage should indicate that another spraying is necessary. Some of the materials used are costly, but anyone who has followed a spray outfit for a day is fully convinced that the solution itself is not the only item of expense. Spraying is hard, disagreeable work, nevertheless there are few orchardists who would be willing to risk their crop with one spray for codling moth, or for the prevention of scab in scab-infested areas. In most of the irrigated sections it is found necessary to spray more than once for the purpose of holding in check the various forms of aphids. I have studied the results obtained by the growers of the different districts and find a con-

## Orenco Prune Trees Cheap

Myrtle Creek, Oregon, November 26, 1914.  
 I feel like saying a few words to you on paper in regard to my Italian Prune trees. I am more than pleased with them. Really they are better than I expected. I cannot speak too much in praise of your company for such good trees. They are of good size, good height and good roots. Everyone that I talked with that ordered from you is well pleased.

(Signed) J. A. Copeland.

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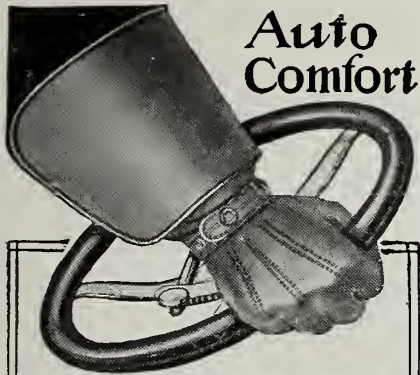
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stant tendency, based upon actual experience, to increase the efficiency of their spray by putting more materials of various kinds in it and endeavoring to make a concoction that will kill everything present and prevent any other mischievous organism getting a hold in the immediate future.

The apple mildew is another disease that I want to mention at this time because it has spread so rapidly during the last season in some parts of Washington, and I understand is also in some of our neighboring states. This disease was for a time thought to be of little importance. Ordinarily mildews disappear or their spread and development is checked by warm, dry weather. Some of us expected this to take place with the development of mildew this past season, but it seemed to develop and grow just as rapidly in dry weather as in moist. Bordeaux mixture did not control it; neither did lime-sulphur, although I found a few men who claimed that they were holding it in check by the use of lime-sulphur. The manager of one badly infested orchard which I visited claimed to be holding the disease in check by lime-sulphur. It did not seem to me that his efforts were successful, although one visit to the orchard could not be used as a basis for judgment, especially when that judgment was contradicted by an intelligent man who was working in the orchard every day. This disease has been a pest in some of the apple orchards of California for several years and has only recently done enough damage in Washington to attract much attention. The results secured in the experimental work in California indicate that free, or what is more commonly called pure sulphur, is the best known material to use in spraying to control apple mildew. All of the common standard fungicides were tested with many new preparations, and what is called precipitated sulphur gave best results. In the experimental work this was prepared by dissolving two pounds of iron sulphate in about ten gallons of water and slowly adding concentrated lime-sulphur until no more black precipitate is formed. This is allowed to settle and the clear liquid poured off. Water is added again and the material vigorously stirred, and the same operation repeated two or three times. The black precipitate is then mixed with 100 gallons of water and used as a spray. The value of this mixture does not seem to be impaired by adding arsenate of lead and nicotine for the control of insects. The first application of this combined spray mixture is used as the calyx spray. The second application should be made about ten days or two weeks later. The third application is made about three weeks after the second. The fourth application is made about three weeks after the third. Some fruitgrowers in Hood River last summer added the iron-sulphate solution to the lime-sulphur and arsenate solution after the latter had been diluted in the spray tanks.

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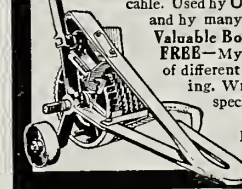
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## Crown Gall, Black Knot, Etc.

Continued from last issue

Owing to the overlapping of the broods, individual scales in every stage of development can be found at any time of the summer. The winter, however, is passed only by those individuals that have not molted. These are blackish in color, small in size and are most abundant on the smaller branches, which therefore require the closest attention when spraying for this pest. A few of the old yellowish females remain alive into the spring, but they reproduce only a very small percentage of the future scales. Ordinarily severe winter weather destroys but few of the quarter-grown individuals. The condition of the host tree is a much more important factor in determining the winter mortality of the scale. A vigorous tree that is not poisoned by the injections of the insects is likely to over-winter as much as ninety-eight per cent of the individuals. On trees that are badly poisoned, however, as many as ninety per cent of the scales succumb. The individuals that survive the winter resume growth very early in the spring, so that by May they reach maturity, and from then on the young are continually born.

While many insects restrict their food to a few species of plants, the San Jose scale can exist on a wide range of hosts. Apple, pear, peach, cherry, plum and quince are all very readily infected. Of the orchard trees, the apricot, however, is much less susceptible to attack. Strawberry, raspberry, currant, gooseberry and grape are favorite hosts. The insect frequents the nut trees, such as almond, walnut and chestnut, and of the ornamental plants is frequently found on rose, spirea, honeysuckle, hawthorn, dogwood, willow, locust, maple and poplar, as well as on many other plants. When controlling the scale by spraying, attention should be given the shrubbery along the creeks and river bottoms, as these plants frequently become a reservoir of infection to supply the neighboring district. It is these neglected scales, as well as the few under buds or at the tips of branches, which are usually missed in spraying, that tide the species over to make spraying again necessary the next year.

Although now so widely spread over the United States, this insect does not thrive everywhere within Washington. Several times has it been introduced west of the Cascades, but has failed to gain a foothold. In the upland country of Eastern Washington the insect has never become established, but in all of the river valleys it is present in abundance. The San Jose scale can spread from tree to tree when blown by the wind during its first day of life. During this short period of activity it is able to crawl on insect or bird visitors, and in this way can be carried from orchard to orchard. Its presence in a new district has been brought about either by this method of distribution or more commonly by being introduced on nursery stock. As a very few indi-

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viduals will readily suffice for populating a fruit district, various states have established stringent laws regulating the inspection of nursery stock. However, no matter how well nursery stock is inspected, it would be quite impossible to declare it absolutely free from scale, for the over-wintering young, in size like a pin point and in color harmonizing with the bark, would readily escape even the closest scrutiny. The presence of the scale on the leaves leads to the destruction of such individuals, for when the leaves drop at the close of the season, the scales inhabiting them are destined to perish. To a very large extent the same can be said of scales locating on fruit. It seems improbable that the minute over-wintering individuals on the fruit should be able to derive enough sustenance in the spring of the year to complete their development and arrive at sexual maturity. It has been experimentally shown that such fruit is not a menace, although for commercial purposes it may have but little value.

The disease is extremely common in the nursery. Peach and almond root stock are largely used, as the pits are easily and cheaply secured and the root is well adapted to the various stone fruits. The amount of the disease varies from year to year, being sometimes as great as 75 per cent. The Myrobalan plum is also a very popular stock on the Pacific Coast and is freer from gall than the peach or almond. There is no doubt that much of the disease among orchard trees has its origin in the nursery from which it is distributed far and wide over a wide range of territory. In California and other states, where there is rigid inspection of trees and plants, any showing these galls are rejected, but often the inspection has already taken place but the trouble is not sufficiently developed to show, and so passes inspection only to develop on the young, growing trees.

The injurious effects of the disease vary on the different kinds of trees, some readily succumbing to the disease, while others are more resistant and may live and be quite productive for years. Apple trees are quite subject to crown gall, especially at the point where they have been bench grafted. Here a gall often develops to considerable size in addition to the healing callus. The infection enters the injury from the soil. Budded or field grafted trees, although more expensive, are much superior for planting, as they are always more free from crown gall. The hard and soft forms of gall in apple have a similar cause. The hard form is of slower growth and probably not so injurious. Another form of apple disease supposed to have a similar cause to crown gall is the hairy root disease. This disease is characterized by an increased and abnormal production of fine roots that differ from the normal fibrous ones. These abnormal roots can usually be traced back to an irregular swelling or knot on the root. From these warty knots a rapid-growing, suc-



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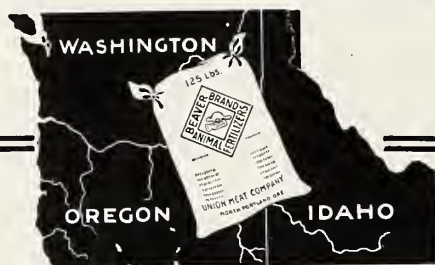
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culent root develops that by an intricate branching develops into a great mass of fine roots. Sometimes there is a broom-like formation of fine roots that occurs at the end of a side root that otherwise seems to be healthy. In general, the hairy roots are more fleshy and numerous than normal roots. Some stages of the disease are not accompanied by typical galls on the roots, but have small enlargements of the tissue at the base of the clustered hairy roots. While this form of gall differs manifestly from the other one described, yet it has been found to be caused by a bacterial organism closely allied to if not identical with the one causing the spherical galls. There is some difference of opinion as to the seriousness of crown gall on apple, some authorities claiming it does not injure the bearing properties, while others claim it makes a stunted and short-lived tree.

Pears are occasionally diseased with crown gall, and the pear stock in common use, *Prunus communis*, as well as the varieties so far tested, readily take to the disease. Not much is known as to how common or serious the disease is in pears.

Cherry stock is somewhat more resistant than peach or roots of the other stone fruits. The Mazzard and Mahaleb roots when tested can be infected, yet the former variety shows considerable resistance. The disease only rarely causes serious trouble in the cherry orchards, although a few cases have been observed where the disease was especially virulent.

Plums, peaches, almonds and apricots are often severely diseased. Different varieties of peaches, Muir, Salway and Lovell, have been artificially infected with gall, as well as the different varieties of almond that are used as rootstocks. Much more resistance is shown among plums, especially those of the German prune and Damson, while the Myrobalan, which is a popular rootstock, is more readily infected. Orchards of peach and almond often show a high percentage of diseased trees, and there is little chance of a badly infected tree outgrowing the disease.

The English walnut is susceptible to the disease when on English roots, as much as 50 per cent of nursery trees being sometimes affected. Galls are not so often found on the black root, *Juglans californica*, which is now used as a rootstock for the grafted varieties of English walnut. The disease on the walnut first causes a gall formation, which later decays and leaves the tree with the appearance of being eaten off at or below the surface of the ground. Black walnuts and English walnuts have been artificially inoculated.

The pecan has been found having the crown gall and has been artificially inoculated from pure cultures. Just how serious the disease may be in the pecan is not known, as the tree is not commercially grown in California.

Quinces as grown in California have an aerial form of the gall called black knot. This has been proven by Dr. Erwin F. Smith to be caused by a



bacterial organism that is probably identical with that of crown gall as found on other trees. The disease in most cases does not seriously affect the tree, although hardly a quince tree in California is free from it.

Grapes are often diseased, the gall being found on cuttings at the cut end or in grafted vines at the place where scion and stock unite. The European varieties are more susceptible than the American species. It has been demonstrated that varieties of grape resistant to the phylloxera are also resistant to crown gall, and these varieties or other varieties grafted on this stock are in all ways to be preferred.

For the control of crown gall disease the following is suggested: Grow the seedling in soil that is supposed to be free from the disease germs. Grow, if possible, stock having some natural resistance to the disease. Certain kinds of plums, as the German and Italian prune (Fellenberg), appear to have strong resistance to crown gall. Grape stock of the Rupestris St. George variety, according to experiments of Dr. George G. Hedgecock, show strong resistance to crown gall as well as to phylloxera. He also shows certain varieties of apples, such as Northern Spy, Ben Davis and Bellflower, to be very resistant. A large number of native species of plums are to be found in the United States, many of which are suitable for stock of the stone fruits. Among these are several types of hybrids that are vigorous and are used in certain sections as stock. There are Chinese and Siberian species that may be excellent for stone fruits. In California there are three or four wild species of Prunus that may be adapted for certain sections and certain fruits. One of these is the California wild plum, *Prunus subcordata*, var. *Kelloggii* or *Sisson* plum, found growing near Mount Shasta. Then there is the desert apricot, *P. eriogyna*, growing on the very edge of the desert. This is a bush, rarely a tree, from six to twelve feet high. The seedlings resemble the cultivated apricot somewhat in appearance of leaf. The pits germinate quickly, in ten to fifteen days, and if sown early in the spring they would not require layering. In general appearance and size the pits are quite similar to those of *Myrobalan*. A strong growing tap root is quickly developed. It is not known whether this species will easily transplant or how well it is adapted to the stone fruits. It is closely related botanically to the apricot. The desert almond, *P. fasciculata*, is native over a considerable area of Southern California. It is a small, slightly thorny shrub, about four to six feet high. Pits small, irregular in shape, thin walled, smooth, with sharp ridges. The Texas almond, *P. minutiflora*, maximum growth about twelve feet. It is found entirely in Texas and is often badly infected with crown gall. Then there is a Mexican almond, *P. microphylla*, which closely resembles the Texas almond. These would doubtless be adapted to the peach and almond, but might not show



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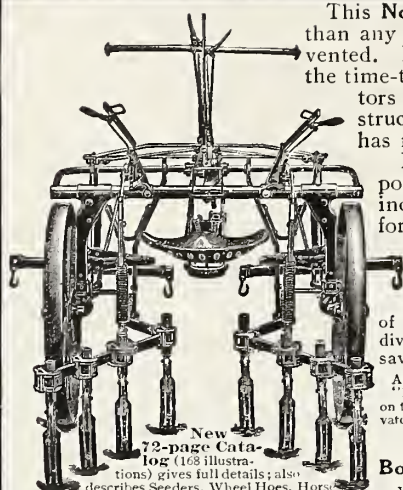
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much advantage over those we already grow. They have strongly developed tap roots.

Carefully discard all diseased trees, even if some have to be sacrificed that have only small galls. If the inspector does not throw out the diseased trees the grower should do so. The following spring the young trees should be carefully examined by digging away the earth about the crown down to the roots. If the trunk shows any evidence of gall formation the tree should be marked, either to be replanted or treated. A tree after the end of the first year is not so likely ever to contract gall, although it would be well to again inspect the trees at the end of the second season. When a tree is replanted where a diseased one has been grown care should be taken to use fresh earth in filling in around the tree.

If the galls are just beginning to develop tree surgery may be employed. This consists in cutting out the affected tissue with a sharp knife and painting over with some disinfectant. The best preparation to use is a bordeaux paste, which lasts a long time and is easily prepared as follows: One pound of bluestone (copper sulphate) dissolved in one gallon of water in a wooden or earthen vessel. This can best be done by hanging it in a sack in the top of the water. Two pounds of unslaked lime, slaked in about half a gallon of water. Some variation from these proportions may be made without greatly changing the value of the paste. Stir together when cool, making a light blue mixture about the consistency of whitewash. If the mixture turns to some other color before being applied it is an indication that something is wrong. Mix up fresh each day or two, as the mixed paste tends to deteriorate with age. It may be applied with a large brush in the same manner as whitewash.

The treated tree should be marked and examined again, for often the first treatment is not entirely effective and the galls may again begin to appear at the treated margins. If such is the case the tree should be again treated. The individual judgment of the operator must be used as to whether the small tree had best be replanted to treat. If one begins with the small orchard and is willing to give careful attention to this trouble there should be no difficulty in keeping the crown of the tree free from gall. The root one cannot expect to treat. It would be better not to take too much risk in treating badly galled trees of one year's growth in the orchard, as it is very questionable if such will ever become profitable commercial trees.

D. Crossley & Son, apple dealers of New York, never forget their friends and customers at New Year. This year they mailed out an exceedingly handsome and attractive calendar, which is meeting with much appreciation. D. Crossley & Son are large apple dealers in England, maintaining a branch house in New York City.



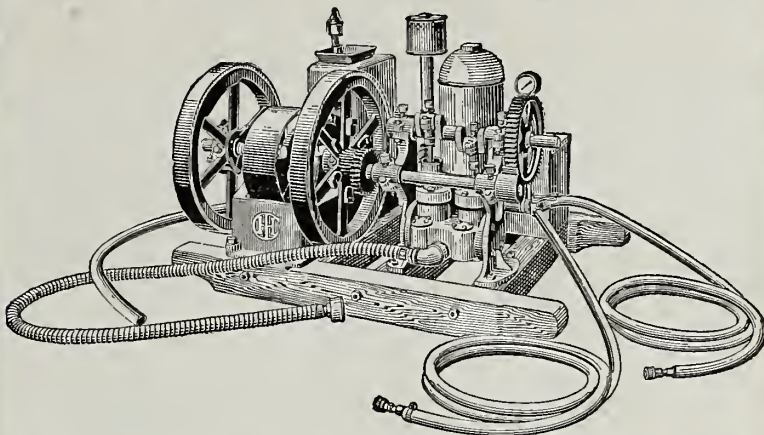
## The San Jose Scale Insect, Etc.,

Continued from last issue

The San Jose scale differs from other scale insects in being many-brooded during the summer. Other scales with which it would be confused have but a single generation each year. In the Northwest a common scale insect is the oyster-shell bark louse. This long and narrow insect, several times larger than the San Jose scale, over-winters in the egg condition to hatch in early summer. The oyster-shell scale is mainly abundant in Western Washington and in those orchards of Eastern Washington at an elevation above 1,800 feet. Cottonwood trees are often afflicted with a scale known as *Aspidiotus ancyllus*, which is almost indistinguishable from the San Jose scale. Oranges are sometimes received infested with another similar scale known as *Aspidiotus aurantii*, but as the scales of the citrus fruits cannot thrive on the deciduous fruits of the North, they need not be a cause for alarm.

Fortunately the San Jose scale can be quite easily controlled. It readily succumbs to applications either of oil sprays or of sulphur-lime. Normally, a great many individuals die through the agency of internal parasites or of such carnivorous insects as the Lady Bird beetles; some die of inclement weather or through inability to obtain a foothold when first born; many die from the poison they themselves develop in their food plant; but such deaths can be considered in no wise as reducing the danger from this pest. Summer spraying has never proved adequate, for a spray strong enough to destroy the old, heavy-shelled females will injure the foliage. During the dormant season trees will withstand a relatively strong application of spray, and for this reason, as well as for the fact that most of the individuals to be destroyed are the scarcely protected young, winter spraying has come into general custom. Since the insects occur so largely at the ends of branches and hide beneath bud scales, or even within the shell scale of their parents, it becomes necessary to drive the spray with force over every side of every limb, following the branches from the tips toward the trunk. The spraying should be done from a raised platform, using none but the Bordeaux type of nozzle attached to a crook-joint to direct the spray into the tree. For small trees the Bordeaux nozzle may be partly closed to avoid waste of the spray, but the solid, flat, driving stream from this kind of nozzle is essential for thoroughness. To quicken the application as well as to assure the penetration necessary for good results, a high pressure should obviously be maintained. Spraying should not be done in mid-winter, when the scales are frozen, nor should it be timed too late. After the buds have swollen it is much more difficult to force spray beneath them, and, moreover, it seems that when the scale insect has awak-

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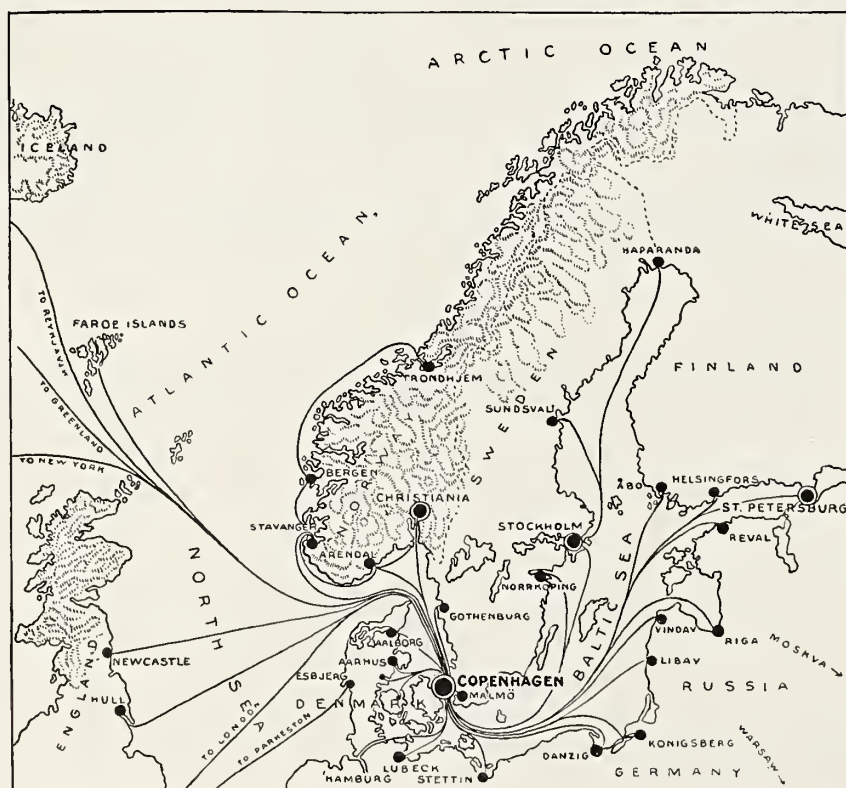
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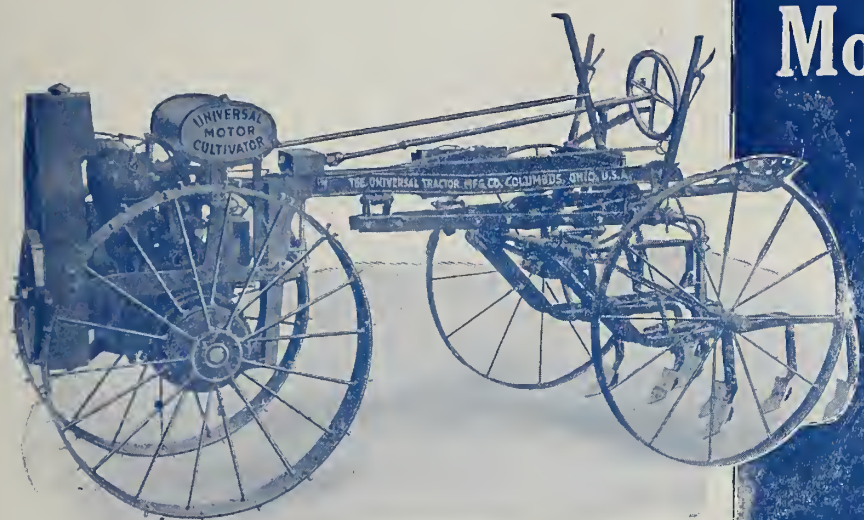
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ened and has resumed its feeding, it becomes more resistant to the sprays. As far as the San Jose scale is concerned fall spraying is as effective as the spring application; but custom decrees that the spraying should be done in March. A single application of 3-degree sulphur-lime, if given with the utmost thoroughness, will usually suffice to kill all the San Jose scale. However, it appears that quite lately certain strains of this insect have developed more or less resistance to the action of this spray. Sulphur-lime destroys mainly by extracting oxygen from the insect, and so kills by a sort of chemical suffocation. This process, rapid at first, is continued over some time. A few weeks after the spraying, the action of the sulphur obtained from the disintegrating sulphur-lime adds to the destruction. Thus it is that insects sprayed with sulphur-lime may linger for weeks before dying. Usually this spray will kill all of the scale within a few weeks or even days, but in some districts of the Northwest, as well as probably elsewhere, some few individuals retain a remarkable tenacity of life and commence their growth in the spring even though coated with spray. It appears that oil sprays are quicker in action and even more destructive than sulphur-lime. For this reason they are to be recommended, especially in those districts where sulphur-lime has failed to give satisfaction. The living San Jose scale is provided with a yellowish body juice. Shortly after death this juice becomes oily in character and of a deeper yellow color. After the oily stage the insects dry out and darken. A few weeks after spraying, therefore, the effectiveness of the treatment can be readily ascertained by rubbing a knife blade flatwise over an infested twig. The character of the scrapings, whether juicy, oily or scurfy, will indicate the condition of the insect.

By way of a direct prescription, under Washington conditions, the following treatment may be summarized: (1) Spray in February or early March, just as the buds begin to swell. (2) Use preferably an eight-per-cent emulsion of crude petroleum oil, or sulphur-lime, testing 3 degrees Beaume, i. e., containing one pound of sulphur and one-half pound of lime to every five gallons of completed spray, which is equivalent to a dilution of one to thirteen of standard (33 degree) factory-made concentrated sulphur-lime. (3) Use the penetration system of spraying; keep the pressure high; spray downward from a raised platform; use only the Bordeaux nozzle attached by a crook-joint, and then wet every speck of surface of the tree. If thoroughness were practiced as well as it is preached, spraying would cease to be a continual costly drudgery.

Harrison Nurseries, of Berlin, Maryland, are mailing out a very handsome catalog illustrated in colors, with some beautiful pictures of different varieties of fruits.





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